



HAZARDOUS MATERIALS AWARENESS AND OPERATIONS COURSE PACKET General Course Information, Certification Requirements, and Course Objectives

EFFECTIVE APRIL 1, 2019

Course Overview

The Hazardous Materials Awareness and Operations Course is designed to provide firefighters the practical and cognitive training needed to operate safely and effectively on the hazardous materials incident scene. The course material meets the training and education standards as identified in the National Fire Protection Association (NFPA) Standards, NFPA 1072 "Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications" and is the minimum level of training recommended to function as a firefighter in the State of Ohio. This entry-level firefighter training course focuses on an intense hands-on approach to hazardous material response, which promotes both skill competency and an understanding of the fireground.

The Hazardous Materials Awareness and Operations Course Objectives are part of the Firefighter I and Firefighter I & II curriculum. Successful completion of the course is required to be eligible to sit for the state examination to be certified at the Firefighter I or Firefighter II level.

Course Objectives

The Hazardous Materials Awareness and Operations Course Objectives are required to meet the industry standard for firefighter training as determined by the National Fire Protection Association (NFPA) 1072 Standard (2017 edition). Proper documentation of students meeting course objectives is required.

Course Requirements

The Hazardous Materials Awareness and Operations Course shall consist of a **minimum of twenty four (24) hours** of hazardous materials awareness and operations level training that meets the general knowledge and skills requirements as specified in NFPA 1072 "Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications"; all the objectives in the NFPA 1001 for Firefighter I; and the objectives as set forth in the "Hazardous Materials Awareness and Operations Course Packet" approved by the Executive Director, with advice and counsel of the committee.

Contact Hours

Student contact hours: 50 – 60 minutes = 1 hour; 25 – 30 minutes = ½ hour; full days (0800 – 1600) = 7 hours (assuming 1 hour for lunch unless otherwise documented). Instructional hours may include topic instruction, material review, and testing for knowledge, e.g., quizzes. Instructional hours shall not include practical skill testing, written testing for certification, or instruction on any topic(s) not listed on this guide.

FIREFIGHTER I & II JOB PERFORMANCE REQUIREMENTS – HAZARDOUS MATERIALS AWARENESS (NFPA 1072)

NFPA 1072 Standard	IFSTA Chapter Title Page #	J&B Chapter Title Page #	Cognitive Hours	Practical Hours	Total Hours
4.1.1 4.1.2 4.1.3 4.2.1 4.3.1 4.4.1	Chapter 24 Analyzing the Incident Pages 1047-1213	Chapter 29: HazMat Regulations, Standards & Laws - Pages 1061-1074 Chapter 30: Recognizing & Identifying Hazards – Pages 1075-1105 Chapter 31: Properties & Effects – Pages 1107-1128 Chapter 32: Understanding Hazards – Pages 1131-1163	8	0	8

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5.1.1 5.1.2 5.1.3 5.1.4 5.1.5 5.2.1 5.3.1 5.4.1 5.5.1 5.6.1 6.1.1 6.1.2 6.1.3 6.1.4 6.1.5 6.1.6 6.2.1 6.6.1	Chapter 25 Action Options and Response Objectives Pages 1217-1302 Chapter 26 Personal Protective Equipment, Product Control Pages 1305-1381	Chapter 33: Estimating Potential Harm and Planning a Response Pages 1165-1190 Chapter 34: Implementing the Planned Response Pages 1193-1213 Chapter 35: Hazardous Materials Responder Health and Safety Pages 1215-1235 Chapter 36: Hazardous Materials Responder PPE Pages 1237-1268 Chapter 37: Product Control Pages 1271-1290	8	8	16

TOTAL HAZARDOUS MATERIALS AWARENESS/OPERATIONS (NFPA 1072)

16	8	24
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OHIO HAZARDOUS MATERIALS AWARENESS COURSE OBJECTIVES

4.1 GENERAL

- 4.1.1 Awareness personnel are those persons who, in the course of their normal duties, could encounter an emergency involving hazardous materials/weapons of mass-destruction (WMD) and who are expected to recognize the presence of the hazardous materials/WMD, protect themselves, call for trained personnel, and secure the area.
- 4.1.2 Awareness personnel shall meet the job performance requirements defined in Sections 4.2 through 4.4.
- 4.1.3 **General Knowledge Requirements.** Role of awareness personnel at a hazardous materials/WMD incident, location and contents of the AHJ emergency response plan, and standard operating procedures for awareness personnel.

4.2 RECOGNITION AND IDENTIFICATION

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

COGNITIVE

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

PSYCHOMOTOR

1. Demonstrate ability to recognize indicators to the presence of hazardous materials/WMD.
2. Identify hazardous materials/WMD by name, UN/NA identification number, placard applied, or container identification charts.
3. Demonstrate ability to use the ERG, SDS, shipping papers with emergency response information, and other approved reference sources to identify hazardous materials/WMD and their potential fire, explosion, and health hazards.

4.3 INITIATE PROTECTIVE ACTIONS

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

COGNITIVE

1. Describe steps to use the ERG, SDS, shipping papers with emergency response information, and other approved reference sources to identify precautions to be taken to protect responders and the public.
2. Explain policies and procedures for isolating the hazard area and denying entry.
3. Describe the purpose of and methods for isolating the hazard area and denying entry.

PSYCHOMOTOR

1. Demonstrate ability to recognize precautions for protecting responders and the public.
2. Identify isolation areas, denying entry, avoiding and minimizing hazards.

4.4 NOTIFICATION

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

COGNITIVE

1. Identify policies and procedures for notification, reporting, and communications.
2. List the types of approved communications equipment.
3. Describe the operation of that equipment.

PSYCHOMOTOR

1. Demonstrate ability to operate approved communications equipment and to communicate in accordance with policies and procedures.

OHIO HAZARDOUS MATERIALS OPERATIONS COURSE OBJECTIVES

5.1 GENERAL

- 5.1.1 Operations level responders are those persons who respond to hazardous materials/weapons of mass destruction (WMD) incidents for the purpose of implementing or supporting actions to protect nearby persons, the environment, or property from the effects of the release.
- 5.1.2 Operations level responders shall meet the job performance requirements defined in Sections 4.2 through 4.4.
- 5.1.3 Operations level responders shall meet the job performance requirements defined in Sections 5.2 through 5.6.
- 5.1.4 Operations level responders shall have additional competencies that are specific to the response mission and expected tasks as determined by the AHJ.
- 5.1.5 Role of operations level responders at a hazardous materials/WMD incident; location and contents of AHJ emergency response plan and standard operating procedures for operations level responders, including those response operations for hazardous materials/WMD incidents.

5.2 IDENTIFY POTENTIAL HAZARDS

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

COGNITIVE

1. Outline various hazard classes and divisions.
2. Classify types of containers.
3. Describe container identification markings, including piping and pipeline markings and contacting information.
4. Identify types of information to be collected during the hazardous materials/WMD incident survey.
5. Determine availability of shipping papers in transportation and of safety data sheets (SDS) at facilities.
6. Outline types of hazard information available from and how to contact CHEMTREC, CANUTEC, and SETIQ, governmental authorities, manufacturers, shippers and carriers.
7. Describe how to communicate with carrier representatives to reduce impact of a release.
8. Summarize basic physical and chemical properties, including boiling point, chemical reactivity, corrosivity (pH), flammable (explosive) range [LFL (LEL) and UFL (UEL)], flash point, ignition (auto ignition) temperature, particle size, persistence, physical state (solid, liquid, gas), radiation (ionizing and non-ionizing), specific gravity, toxic products of combustion, vapor density, vapor pressure, and water solubility.
9. Explain how to identify the behavior of a material and its container based on the material's physical and chemical properties and the hazards associated with the identified behavior.
10. Recognize examples of potential criminal and terrorist targets.
11. Identify indicators of possible criminal or terrorist activity for each of the following: chemical agents, biological agents, radiological agents, illicit laboratories (i.e., clandestine laboratories, weapons labs, ricin labs), and explosives.
12. Recognize additional hazards associated with terrorist or criminal activities, such as secondary devices.
13. Outline how to determine the likely harm and outcomes associated with the identified behavior and the surrounding conditions.

PSYCHOMOTOR

1. Identify container types, materials, location of release, and surrounding conditions at a hazardous materials/WMD incident.
2. Demonstrate the ability to collect hazard information.
3. Practice communicating with pipeline operators or carrier representatives.
4. Anticipate the likely behavior of the hazardous materials or WMD and its container.
5. Describe the potential hazards, harm and outcomes associated with that behavior and the surrounding conditions.

5.3 IDENTIFY ACTIONS OPTIONS

5.3.1 Identify the action options for a hazardous materials/WMD incident, given a hazardous materials/WMD incident, an assignment, policies and procedures, approved reference sources, and the scope of the problem, so that response objectives, action options, safety precautions, suitability of approved personal protective equipment (PPE) available, and emergency decontamination needs are identified.

COGNITIVE

1. Outline policies and procedures for hazardous materials/WMD incident operations.
2. Identify basic components of an incident action plan (IAP).
3. Describe modes of operation (offensive, defensive, and nonintervention).
4. Illustrate types of response objectives and types of action options.
5. Summarize types of response information available from the Emergency Response Guidebook (ERG), safety data sheets (SDS), shipping papers with emergency response information, and other resources.
6. Summarize types of information available from and how to contact CHEMTREC, CANUTEC, and SETIQ, governmental authorities, and manufacturers, shippers and carriers (highway, rail, water, air, pipeline).
7. Outline safety procedures.
8. Discuss risk analysis concepts.
9. Categorize the purpose, advantages, limitations, and uses of approved PPE to determine if PPE is suitable for the incident conditions.
10. Differentiate between exposure and contamination.
11. Identify contamination types, including sources and hazards of carcinogens at incident scenes.
12. Identify the routes of exposure.
13. Define the types of decontamination (emergency, mass, and technical).
14. Describe the purpose, advantages, and limitations of emergency decontamination.
15. Outline the procedures, tools, and equipment for performing emergency decontamination.

PSYCHOMOTOR

1. Identify the response objectives and action options based on the scope of the problem and available resources.
2. Determine whether approved PPE is suitable for the incident conditions.
3. Evaluate emergency decontamination needs based on the scope of the problem.

5.4 ACTION PLAN IMPLEMENTATION

5.4.1 Perform assigned tasks at a hazardous materials/WMD incident, given a hazardous materials/WMD incident; an assignment with limited potential of contact with hazardous materials/WMD, policies and procedures, the scope of the problem, approved tools, equipment, and PPE, so that protective actions and scene control are established and maintained, on-scene incident command is described, evidence is preserved, approved PPE is selected and used in the proper manner; exposures and personnel are protected; safety procedures are followed; hazards are avoided or minimized; assignments are completed; and gross decontamination of personnel, tools, equipment, and PPE is conducted in the field.

COGNITIVE

1. Describe scene control procedures.
2. Summarize procedures for protective actions, including evacuation and sheltering-in-place.
3. Outline procedures for ensuring coordinated communications between responders and to the public.
4. Discuss evidence recognition and preservation procedures.
5. Summarize the incident command organization, its purpose, importance, benefits, and organization of incident command at hazardous materials/WMD incidents.
6. Outline policies and procedures for implementing incident command at HazMat/WMD incidents.
7. Illustrate the capabilities, limitations, inspection, donning, working in, going through decontamination while wearing, and doffing approved PPE.
8. Discuss the signs and symptoms of thermal stress.
9. Explain the safety precautions when working at hazardous materials/WMD incidents.
10. Discuss the purpose, advantages, and limitations of gross decontamination.
11. Anticipate the need for gross decontamination in the field based on the task(s) performed and contamination received, including sources and hazards of carcinogens at incident scenes.
12. Describe gross decontamination procedures for personnel, tools, equipment, and PPE.
13. Outline procedures for cleaning, disinfecting, and inspecting tools, equipment, and PPE.

PSYCHOMOTOR

1. Establish and maintain scene control.
2. Recognize and preserve evidence.
3. Demonstrate the ability to inspect, don, work in, go through decontamination while wearing, and doff approved PPE.
4. Isolate contaminated tools, equipment, and PPE.
5. Conduct gross decontamination of contaminated personnel, tools, equipment, and PPE in the field.
6. Clean, disinfect, and inspect approved tools, equipment, and PPE.

5.5 EMERGENCY DECONTAMINATION

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

COGNITIVE

1. Define contamination, cross contamination, and exposure.
2. Identify contamination types; routes of exposure; types of decontamination (emergency, mass, and technical).
3. Outline the purpose, advantages, and limitations of emergency decontamination.
4. Discuss policies and procedures for performing emergency decontamination.
5. List the approved tools and equipment for emergency decontamination.
6. Summarize hazard avoidance considerations for emergency decontamination.

PSYCHOMOTOR

1. Select an emergency decontamination method.
2. Set up emergency decontamination in a safe area.
3. Utilize PPE in the proper manner.
4. Implement emergency decontamination procedures.
5. Prevent the spread of contamination.
6. Avoid hazards during emergency decontamination.

5.6 PROGRESS EVALUATION AND REPORTING

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

COGNITIVE

1. Review the components of progress reports.
2. Outline policies and procedures for evaluating and reporting progress.
3. Discuss the use of approved communication tools and equipment.
4. Identify the signs indicating improving, static, or deteriorating conditions based on the objectives of the action plan.
5. Summarize the circumstances under which it would be prudent to withdraw from a hazardous materials/WMD incident.

PSYCHOMOTOR

1. Determine incident status.
2. Determine whether the response objectives are being accomplished.
3. Demonstrate proper use of approved communications tools and equipment.
4. Properly communicate the status of assigned tasks.

6.1 GENERAL

6.1.1 Operations level responders assigned mission-specific responsibilities at hazardous materials/WMD incidents are those operations level responders designated by the AHJ to perform additional tasks to support the AHJ's response mission, expected tasks, equipment, and training in the following areas:

1. Personal protection equipment (PPE) (see Section 6.2)
2. Mass decontamination (see Section 6.3)
3. Technical decontamination (see Section 6.4)
4. Evidence preservation and sampling (see Section 6.5)
5. Product control (see Section 6.6)
6. Detection, monitoring, and public safety sampling (see Section 6.7)
7. Victim rescue and recovery (see Section 6.8)
8. Illicit laboratory incidents (see Section 6.9)

6.1.2 Operations level responders assigned mission-specific responsibilities at hazardous materials/weapons of mass destruction (WMD) incidents shall meet the job performance requirements defined in Sections 4.2 through 4.4.

6.1.3 Operations level responders assigned mission-specific responsibilities at hazardous materials/WMD incidents shall meet the job performance requirements defined in Sections 5.2 through 5.6.

6.1.4 Operations level responders assigned mission-specific responsibilities at hazardous materials/WMD incidents shall have additional competencies that are specific to their response mission, expected tasks, equipment, and training as determined by the AHJ.

6.1.5 Qualification for operations level responders assigned mission-specific responsibilities at hazardous materials/WMD incidents is specific to a mission area. For qualification, operations mission-specific responders shall perform all the job performance requirements listed in at least one level of a specialty area (Sections 6.2 through 6.9). Operations mission-specific responders will be identified by their specialty.

6.1.6 Operations level responders assigned mission-specific responsibilities at hazardous materials/WMD incidents shall operate under the guidance of a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures.

6.2 PERSONAL PROTECTIVE EQUIPMENT

6.2.1 Select, don, work in, and doff approved PPE at a hazardous materials/WMD incident, given a hazardous materials/WMD incident; a mission-specific assignment in an IAP that requires use of PPE; the scope of the problem; response objectives and options 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, 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; and all reports and documentation pertaining to PPE use are completed.

COGNITIVE

1. Review policies and procedures for PPE selection and use.
2. Discuss 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.
3. Identify the capabilities and limitations of and specialized donning, doffing, and usage procedures for approved PPE.
4. Outline the components of an incident action plan (IAP).
5. Summarize procedures for decontamination, inspection, maintenance, and storage of approved PPE.
6. Discuss the process for being decontaminated while wearing PPE.
7. Review the procedures for reporting and documenting the use of PPE.

PSYCHOMOTOR

1. Select PPE for the assignment.
2. Demonstrate the ability to inspect, maintain, store, don, work in, and doff PPE.
3. Demonstrate going through decontamination (emergency and technical) while wearing the PPE.
4. Property report and document the use of PPE.

6.6 PRODUCT CONTROL

6.6.1 Perform product control techniques with a limited risk of personal exposure at a hazardous materials/WMD incident, 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, 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.

COGNITIVE

1. Review types of PPE and the hazards for which they are used.
2. Discuss the importance of working under the guidance of a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures.
3. Define control, confinement, containment, and extinguishment.
4. Review policies and procedures.
5. Review product control methods for controlling a release with limited risk of personal exposure.
6. Discuss safety precautions associated with each product control method.
7. Review the location and operation of remote/emergency shutoff devices in cargo tanks and intermodal tanks in transportation and containers at facilities that contain flammable liquids and flammable gases.
8. Review the characteristics and applicability of approved product control agents.
9. Review the use of approved tools and equipment.
10. Review requirements for reporting and documenting product control operations.

PSYCHOMOTOR

1. Select and use the appropriate PPE.
2. Demonstrate selecting and performing product control techniques to confine/contain the release with limited risk of personal exposure.
3. Demonstrate using approved control agents and equipment on a release involving hazardous materials/WMD.
4. Demonstrate using remote control valves and emergency shutoff devices on cargo tanks and intermodal tanks in transportation and containers at fixed facilities.
5. Demonstrate performing product control techniques.