Hazardous Materials Awareness/Operations

NFPA 1072

NFPA 1001

**Meets requirements of NFPA 1072 & 1001 for Hazardous Materials Awareness/Operations Level with Personal Protective Equipment & Product Control Modules

State of New Hampshire

Department of Safety

Division of Fire Standards and Training and Emergency Medical Services
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Commissioner

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Director

NH Fire Instructor,

This course is developed and administered using the Jones & Bartlett Fundamentals of Firefighter Skills 3nd Edition.

Chapters 28 – 35 meet all the necessary guidelines set forth from NFPA 1001 Firefighter Competencies for certification of NFPA 1072 Hazardous Materials Awareness & Operations Level & Personal Protective Equipment & Product Control Modules.

I would like to thank the NFPA 1072 Visiting Committee members for their work on selecting a curriculum that both meets the needs of our Instructors and Students, with the best interests of the New Hampshire Fire Academy at heart.

If you should have any questions about the course or curriculum please do not hesitate to contact me.

Professionally,

Jeffrey Allison
Hazardous Materials Program Coordinator

Hazardous Materials Operations
Recommended Delivery Format

Day 1 Online Learning Academy

OLA Hazardous Materials Awareness
OLA Terrorism Awareness

Exam Hazmat Awareness Exam (All students must pass Awareness before Testing for Operations, NOT given the same night of last classroom)

Day 2 0830-1700 2 Instructors

Chapter 29 Properties & Effects
Chapter 31 Hazardous Materials: Implementing
Chapter 32 Scene Safety & Control
Chapter 33 Hazardous Materials: Response Priorities & Actions
Chapter 34 Hazardous Materials: Decontamination Techniques

Day 3 0830-1700 9 Instructors (1 Lead, 8 Assistant)

Skill Drill 32-1 Donning a Level B Encapsulated CPE
Skill Drill 32-2 Doffing a Level B Encapsulated CPE
Skill Drill 32-3 Donning a Level B Non-encapsulated CPE
Skill Drill 32-4 Doffing a Level B Non-encapsulated CPE
Skill Drill 32-5 Donning a Level C CPE
Skill Drill 32-6 Doffing a Level C CPE
Skill Drill 32-7 Donning a Level D CPE
Skill Drill 32-8 Doffing a Level D CPE
Skill Drill 33-1 Using a Multi-Gas Meter (Optional)
Skill Drill 33-2 Using Absorbtion/Adsorbtion to Manage a HM Incident
Skill Drill 33-3 Constructing a Dike
Skill Drill 33-4 Constructing an Overflow Dam
Skill Drill 33-5 Constructing an Underflow Dam
Skill Drill 33-6 Constructing a Diversion
Skill Drill 33-7 Using Retention to Manage a HM Incident
Skill Drill 33-8 Using Dilution to Manage a HM Incident
Skill Drill 33-9 Using Vapor Dispersion to Manage a HM Incident
Skill Drill 33-10 Using Vapor Suppression to manage a HM Incident
Skill Drill 34-1 Performing Emergency Decontamination
Skill Drill 34-2 Performing Mass Decontamination (Optional)
Skill Drill 34-3 Performing Responder Decontamination (Optional)

Exam Hazardous Materials Operations Exam (Not given the same day as last class)

CHAPTER 29

Hazardous Materials: Properties and Effects

CHAPTER OVERVIEW

Once an emergency is recognized as a hazardous materials incident, a plan must be formulated to ensure the safety of the responders and the public in the affected area. This plan is formed by gathering information and dispersing that information to the proper agencies. It is important to be accurate in that information because the smallest error could have disastrous results. Until a plan is put together, no action that involves direct contact with the material should be attempted. Establishing a response plan and accessing resources will help resolve the incident effectively and ensure the safety of all involved.

After students complete this chapter and the related course work, they will be able to describe how to contact proper authorities, plan an initial response, estimate the size and scope of the incident, plan for secondary attacks, and identify a resource for determining the size of an endangered area. Students will also be able to initiate an incident command system (ICS) for a hazardous materials incident.

OBJECTIVES AND RESOURCES

Fire Fighter I

Knowledge Objectives

After studying this chapter, you will be able to:

- Describe how to identify a substance's state of matter. (NFPA 472, 5.2.3, 6.6.1.1.2, p 880)
- Describe the process of chemical change. (NFPA 472, 5.2.3, 6.6.1.1.2, p 881)
- Describe the process of physical change. (NFPA 472, 5.2.3, 6.6.1.1.2, p 881)
- Define boiling point and explain how this principle affects hazardous materials. (NFPA 472, 5.2.3, 6.6.1.1.2, p 881)
- Define flash point and explain how this principle affects hazardous materials. (NFPA 472, 5.2.3, 6.6.1.1.2, p 881–882)
- Define fire point and explain how this principle affects hazardous materials. (NFPA 472, 5.2.3, 6.6.1.1.2, p 882)
- Define ignition temperature and explain how this principle affects hazardous materials. (NFPA 472, 5.2.3, 6.6.1.1.2, p 882)
- Define flammable range and explain how this principle affects hazardous materials. (NFPA 472, 5.2.3, 6.6.1.1.2, p 882)
- Define vapor density and explain how this principle affects hazardous materials. (NFPA 472, 5.2.3, 6.6.1.1.2, p 883)
- Define vapor pressure and explain how this principle affects hazardous materials. (NFPA 472, 5.2.3, 6.6.1.1.2, pp 883–884)
- Define specific gravity and explain how this principle affects hazardous materials. (NFPA 472, 5.2.3, 6.6.1.1.2, p 884)
- Define water miscibility and explain how this principle affects hazardous materials. (NFPA 472, 5.2.3, 6.6.1.1.2, pp 884–885)
- Define corrosivity and explain how this principle affects hazardous materials. (NFPA 472, 5.2.3, 6.6.1.1.2, p 885)
- Define pH and explain how this principle affects hazardous materials. (NFPA 472, 5.2.3, 6.6.1.1.2, p 885)
- Describe how to determine a substance's pH in the field.
- Describe the physical hazards posed by the toxic products of
- combustion. (NFPA 472, 5.2.3, 6.6.1.1.2, p 885)
- Describe the differences between nonionizing and ionizing radiation. (NFPA 472, 5.2.3, 6.6.1.1.2, pp 886–887)
- Describe how radiation is detected in the field. (p 886)
- Define alpha particles and describe how to avoid exposure. (NFPA 472, 5.2.2, 5.2.3, 5.2.4, 6.6.1.1.2, p 887)
- Define beta particles and describe their potential effects on the human body. (NFPA 472, 5.2.3, 6.6.1.1.2, p 887)
- Define gamma radiation. (NFPA 472, 5.2.3, 6.6.1.1.2, p 887)
- Describe the differences between contamination and secondary contamination. (NFPA 472, 5.2.3, 6.6.1.1.2, p 888)
- List the types of weapons of mass destruction. (NFPA 472, 5.2.3, 6.6.1.1.2, p 888)
- Describe how nerve agents damage the human body. (NFPA 472, 5.2.3, 6.6.1.1.2, pp 888–889)
- List the signs and symptoms of nerve agent exposure. (NFPA 472, 5.2.3, 6.6.1.1.2, pp 888–889)
- Describe how blister agents damage the human body. (NFPA 472, 5.2.3, 6.6.1.1.2, p 889)
- List the signs and symptoms of blister agent exposure. (NFPA 472, 5.2.3, 6.6.1.1.2, p 889)
- Explain the route of exposure for cyanide. (NFPA 472, 5.2.3, 6.6.1.1.2, p 889)
- List the signs and symptoms of cyanide exposure. (NFPA 472, 5.2.3, 6.6.1.1.2, p 889)
- Describe how choking agents damage the human body. (NFPA 472, 5.2.3, 6.6.1.1.2, p 889)

- Describe how irritants damage the human body. (NFPA 472, 5.2.3, 6.6.1.1.2, p 889)
- List convulsant chemicals and describe how they damage the human body. (NFPA 472, 5.2.3, 6.6.1.1.2, pp 889–890)
- List the four ways chemicals can enter the human body. (NFPA 472, 5.2.3, 6.6.1.1.2, pp 890–894)
- Describe the precautions fire fighters take to avoid chemical exposure through inhalation. (NFPA 472, 6.6.1.1.2, p 891)
- Describe the precautions fire fighters take to avoid chemical exposure through absorption. (NFPA 472, 6.6.1.1.2, p 892)
- Explain the differences between chronic and acute health effects. (NFPA 472, 5.2.3, 6.6.1.1.2, p 894)
- List the four major sections of the *Emergency Response Guidebook* (*ERG*). (NFPA 472, 5.2.3, 6.6.1.1.2, p 894)

Skills Objectives

After studying this chapter, you will be able to perform the following skill:

- Demonstrate the ability to properly use the current edition of the *ERG* (p 894).

Fire Fighter II

Knowledge Objectives

There are no knowledge objectives for Fire Fighter II candidates. NFPA 1001 contains no Fire Fighter II Job Performance Requirements for this chapter.

Skills Objectives

There are no skill objectives for Fire Fighter II candidates. NFPA 1001 contains no Fire Fighter II Job Performance Requirements for this chapter.

Reading and Preparation

- Review all instructional materials, including *Fundamentals of Fire Fighter Skills*, Chapter 29, and all related presentation support materials.
- Review local firefighting protocols for Chapter 29.

Support Materials

- Dry erase board and markers or chalkboard and chalk
- LCD projector, slide projector, overhead projector, and projection screen
- PowerPoint presentation, overhead transparencies, or slides

Enhancements

- Direct the students to visit the Internet at www.FireFighter.jbpub.com for online activities.
- Direct the students to relevant sections in the Student Workbook for application of the content introduced in this chapter.
- Direct the students to take practice/final examinations in the Navigate Test Prep to prepare for examinations.

TEACHING TIPS AND ACTIVITIES

- Stress fire fighter safety as the number one priority.
- Attempt to use examples of hazardous materials and scenarios that would be common to the locale of instruction.

CHAPTER 31

Hazardous Materials: Implementing a Response

CHAPTER OVERVIEW

Once a hazardous materials incident has been identified, decisions must be made as to what actions need to be taken and performed safely. If the hazards of the material allow, attempts to control the spill and minimize the damage can be made. When the material is too dangerous, then the only safe action may be to evacuate the area and withdraw to a safe distance. These decisions are based on all the information that has been gathered on the material and what resources are available.

After students complete this chapter and the related course work, they will know how to use a multigas meter and have the ability to build defensive control activities. These activities include absorption/adsorption, overflow and underflow dams, dikes, diversions, retentions, dilution, vapor dispersion, and vapor suppression.

OBJECTIVES AND RESOURCES

Fire Fighter I

Knowledge Objectives

After studying this chapter, you will be able to:

- ~~List and describe the hazardous materials incident levels. (NFPA 472, 5.4.3, 6.6.1.1.2, p 924)~~
- ~~List the information to provide when reporting a hazardous materials incident. (NFPA 472, 5.4.3, 5.5.2, 6.6.1.1.2 , pp 924–925)~~
- ~~Describe how to plan an initial response. (NFPA 472, 5.1.2.2, 5.2.1.4, 5.3, 5.3.2, pp 925–926)~~
- List and describe defensive objectives. (NFPA 472, 5.1.2.2, p 926)
- List and describe defensive actions. (NFPA 472, 5.1.2.2, p 926)
- Describe how to estimate the size and scope of a hazardous materials/weapons of mass destruction incident. (NFPA 472, 5.2.4, p 928)
- Describe the resources available for determining the concentrations of a released hazardous material. (NFPA 472, 5.2.4, p 928)
- ~~Describe a secondary attack and its impact on responders. (NFPA 472, 5.3.1, pp 928–930)~~
- ~~List the signs that indicate the possible presence of a secondary device. (NFPA 472, 5.3.1, pp 928–930)~~
- Explain how the Incident Command System (ICS) is adapted for hazardous materials incidents. (NFPA 472, 5.1.2.2, p 930)
- Identify the considerations for determining the location of the incident command post (ICP). (NFPA 472, 5.4.3, p 930)

Skills Objectives

There are no skill objectives for Fire Fighter I candidates. NFPA 1001 contains no Fire Fighter I Job Performance Requirements for this chapter.

Fire Fighter II

Knowledge Objectives

There are no knowledge objectives for Fire Fighter II candidates. NFPA 1001 contains no Fire Fighter II Job Performance Requirements for this chapter.

Skills Objectives

There are no skill objectives for Fire Fighter II candidates. NFPA 1001 contains no Fire Fighter II Job Performance Requirements for this chapter.

Reading and Preparation

- Review all instructional materials, including *Fundamentals of Fire Fighter Skills*, Chapter 31, and all related presentation support materials.
- Review local firefighting protocols for Chapter 31.

Support Materials

- Dry erase board and markers or chalkboard and chalk
- LCD projector, slide projector, overhead projector, and projection screen
- PowerPoint presentation, overhead transparencies, or slides

Enhancements

- Direct the students to visit the Internet at www.FireFighter.jbpub.com for online activities.
- Direct the students to relevant sections in the Student Workbook for application of the content introduced in this chapter.
- Direct the students take practice/final examinations in the Navigate Test Prep to prepare for examinations.

TEACHING TIPS AND ACTIVITIES

- Stress first responder safety as the number one priority.
- Discuss examples of hazardous materials incidents and scenarios that would be common to the locale of instruction.

CHAPTER 32

Hazardous Materials: Personal Protective Equipment, Scene Safety, and Scene Control

CHAPTER OVERVIEW

Hazardous materials are called hazardous materials because when they are out of their containers they can severely injure or kill people and animals or damage the environment. Responders to hazardous materials incidents need to slow down and determine the proper course of action and the proper protective gear; otherwise they are liable to become victims or be unable to protect the public and the environment. This is counterintuitive for most fire fighters who are action oriented by nature. Fire fighters must be able to identify the specific hazardous materials involved and use a variety of hazardous materials resources to determine potential hazards and effects to select appropriate protective clothing and respiratory protection. In addition, responders must be able to establish control zones to isolate the scene by denying entry to any person who lacks the proper training and equipment and is in proximity to the hazardous materials involved. Failure to adequately control the scene will unnecessarily expose people and property to danger and may cause the release to become much more widespread and difficult to manage than it would have been had the scene been properly controlled.

After students complete this chapter and the related course work, they will be able to describe hazardous materials personal protective equipment (PPE), appropriate respiratory protection in a hazardous materials incident, and the levels of hazardous materials PPE. They will demonstrate how to properly don and doff level A, B, C, and D protective clothing. They will also be able to describe safety precautions, techniques to isolate hazard areas and deny entry, and the importance of the buddy system and back-up personnel.

OBJECTIVES AND RESOURCES

Fire Fighter I

Knowledge Objectives

After studying this chapter, you will be able to:

- Explain how a hazardous material's threshold limit value (TLV) determines the level of protection required for responders. (NFPA 472, 5 5.3.3, 6.6.1.1.2, 6.6.3.2, p 936)
- List the three categories of TLVs. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, p 936)
- List and describe the regulatory measures set by the Occupational Safety and Health Administration (OSHA). (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, p 936)
- List the subcategories of immediately dangerous to life and health (IDLH) atmospheres. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, p 936)
- List and define the three basic types of atmospheres at a hazardous materials incident. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, p 937)
- List the categories of PPE. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, p 937)
- Describe the purpose and components of street clothing and work uniforms. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, p 937)
- Describe the purpose and components of structural firefighting protective clothing. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, p 938)
- Describe the purpose and components of high-temperature protective equipment. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, p 938)
- Describe the purpose and components of chemical protective clothing and equipment. (protective NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, p 938–939)
- Describe the purpose and components of liquid splash protective clothing. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, p 939)
- Describe the purpose and components of vapor-protective clothing. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, p 939)
- Discuss respiratory protection in a hazardous materials incident. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, pp 939–940)
- Describe the levels of hazardous materials PPE. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, pp 941–949)
- List the ratings of chemical-protective clothing. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, pp 941–949)
- Describe the purpose and components of Level A protection. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, p 941)
- Describe the purpose and components of Level B protection. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, pp 941–942)

- Describe the purpose and components of Level C protection. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, pp 945–947)
- Describe the purpose and components of Level D protection. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, pp 947–949)
- Identify the potential skin-contact hazards encountered at hazardous materials incidents. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, p 950)
- Describe the safety precautions to be observed, including those for heat and cold stress, when approaching and working at hazardous materials incidents. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, pp 950–953)
- Describe the signs and symptoms of heat cramps. (NFPA 472, 5.4.4, 6.6.1.1.2, p 950)
- Describe the signs and symptoms of heat exhaustion. (NFPA 472, 5.4.4, 6.6.1.1.2, p 950)
- Describe how to prevent cold injuries. (NFPA 472, 5.4.4, 6.6.1.1.2, pp 952–953)
- Describe the physical capabilities required and limitations of personnel working in PPE. (NFPA 472, 5.4.4, 6.6.1.1.2, p 953)
- List the three control zones. (NFPA 472, 5.4.1, 6.6.1.1.2, p 954)
- Define hot zone and describe the tasks performed in the zone. (NFPA 472, 5.4.1, 6.6.1.1.2, p 954)
- Define warm zone and describe the tasks performed in the zone. (NFPA 472, 5.4.1, 6.6.1.1.2, p 954)
- Define cold zone and describe the tasks performed in the zone. (NFPA 472, 5.4.1, 6.6.1.1.2, p 955)
- Describe the importance of the buddy system and backup personnel. (NFPA 472, 5.4.4, 6.6.1.1.2, p 955)

Skills Objectives

After studying this chapter, you will be able to perform the following skills:

- Don a Level B encapsulated chemical-protective clothing ensemble. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, pp 942–944)
- Don a Level B nonencapsulated chemical-protective clothing ensemble. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, pp 942, 944–945)
- Doff a Level B encapsulated chemical-protective clothing ensemble. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, pp 945–946)
- Doff a Level B nonencapsulated chemical-protective clothing ensemble. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, pp 945, 947)
- Don a Level C chemical-protective clothing ensemble. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, pp 946–947, 949)
- Doff a Level C chemical-protective clothing ensemble. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, p 947)
- Don a Level D chemical-protective clothing ensemble. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, pp 948–949)
- Doff a Level D chemical-protective clothing ensemble. (NFPA 472, 5.3.3, 6.6.1.1.2, 6.6.3.2, p 949)

Fire Fighter II

Knowledge Objectives

There are no knowledge objectives for Fire Fighter II candidates. NFPA 1001 contains no Fire Fighter II Job Performance Requirements for this chapter.

Skills Objectives

There are no skill objectives for Fire Fighter II candidates. NFPA 1001 contains no Fire Fighter II Job Performance Requirements for this chapter.

Additional NFPA Standards:

- NFPA 1951, *Standard on Protective Ensembles for Technical Rescue Incidents*
- NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services*
- NFPA 1991, *Standard on Vapor-Protective Ensembles for Hazardous Materials Emergencies*
- NFPA 1992, *Standard on Liquid Splash-Protective Ensembles and Clothing for Hazardous Materials Emergencies*
- NFPA 1994, *Standard on Protective Ensembles for First Responders to CBRN Terrorism Incidents*
- NFPA 1999, *Standard on Protective Clothing for Emergency Medical Operations*
- National Institute for Occupations Safety and Health (NIOSH) *Standard for Chemical, Biological, Radiological, and Nuclear (CBRN) Open-Circuit Self-Contained Breathing Apparatus*
- NIOSH *Standard for Chemical, Biological, Radiological, and Nuclear (CBRN) Full Facepiece Air Purifying Respirator (APR)*
- NIOSH *Standard for Chemical, Biological, Radiological, and Nuclear (CBRN) Air-Purifying Escape Respirator and CBRN Self-Contained Escape Respirator*

Reading and Preparation

- Review all instructional materials, including *Fundamentals of Fire Fighter Skills*, Chapter 32, and all related presentation support materials.
- Review local firefighting protocols for Chapter 32.
- Review your syllabus to confirm the sequence of this chapter for classroom delivery.
- Review local standard operating procedures regarding hazardous materials response.
- Familiarize yourself with the guidebooks you have selected for the class. Be sure you understand what information each book contains and what information it leaves out. Double-check the units of measurement used by each book because some books will describe specific properties using different units of measurement.
- Familiarize yourself with the properties of the chemical protective suits you have on hand as well as the use of their chemical compatibility charts.

Support Materials

- Dry erase board and markers or chalkboard and chalk

- LCD projector, slide projector, overhead projector, and projection screen
- PowerPoint presentation, overhead transparencies, or slides
- Photocopies of sample material safety data sheets (MSDSs)
- Copies of latest *Emergency Response Guide* (*ERG*), the US Coast Guard's *Chemical Hazard Response Information System Manual*, *American Association of Railroads Hazardous Materials Guide*, and *NIOSH Pocket Guide*.
- Chemical protective ensembles and chemical compatibility charts for each type.

Enhancements

- Direct the students to visit the Internet at www.FireFighter.jbpub.com for online activities.
- Direct the students to relevant sections in the Student Workbook for application of the content introduced in this chapter.
- Direct the students to take practice/final examinations in the Navigate Test Prep to prepare for examinations.
- If available, show the students videotapes of news coverage of local hazardous materials incidents.

TEACHING TIPS AND ACTIVITIES

- Initiate a discussion of a local hazardous materials release to make the concepts more tangible. Be sure to talk about the specific products involved, the effects of those products, and the choice of PPE for the given products. Also point out the fire department's use of control zones and decontamination procedures.
- Augment the discussion by including some "What if?" scenarios (eg, "What if it were chemical X instead of chemical Y that was released?" or "What would you do if no hazardous materials team were available to assist you?")
- Let a student try on a fully encapsulating suit with SCBA to demonstrate how hot it can be and how difficult it can be to work in one.

CHAPTER 33

Hazardous Materials: Response Priorities and Actions

CHAPTER OVERVIEW

Once a hazardous materials incident has been identified, decisions must be made as to what actions need to be taken and performed safely. If the hazards of the material allow, attempts to control the spill and minimize the damage can be made. When the material is too dangerous, then the only safe action may be to evacuate the area and withdraw to a safe distance. These decisions are based on all the information that has been gathered on the material and what resources are available.

After students complete this chapter and the related course work, they will know how to use a multigas meter and have the ability to build defensive control activities. These include absorption/adsorption, overflow and underflow dams, dikes, diversions, retentions, dilution, vapor dispersion, and vapor suppression.

OBJECTIVES AND RESOURCES

Fire Fighter I

Knowledge Objectives

After studying this chapter, you will be able to:

- Define exposures in regard to a hazardous materials incident. (NFPA 472, 5.2.4, 6.6.1.1.2, p 962)
- List two protective actions that may be taken in a hazardous materials incident. (NFPA 472, 5.4, 5.4.1, 6.6.1.1.2 , pp 962–963)
- Describe the role of fire fighters during an evacuation. (NFPA 472, 5.4.1, 6.6.1.1.2, pp 962–963)
- Describe how and when a fire department conducts shelter-in-place operations with a local population. (NFPA 472, 5.4.1, 6.6.1.1.2, p 963)
- Describe the monitoring methods used to detect the presence of a hazardous material. (NFPA 472, 6.6.2, pp 963–964)
- Explain the special considerations to follow when performing search and rescue operations in a hazardous materials incident. (p 964)
- List the methods of protecting exposures from hazardous materials. (pp 965–966)
- Describe confinement and containment operations. (NFPA 472, 6.6.3, 6.6.3.1, 6.6.4, 6.6.4.1, 6.6.5, p 965)
- Describe the methods and tools used to extinguish flammable liquid fires. (NFPA 472, 6.6.1.2.2, pp 965–966)
- Describe the actions taken during a pressurized-gas cylinder leak. (NFPA 472, 6.6.3, 6.6.3.1, 6.6.4, 6.6.4.1, 6.6.5, p 966)
- List the common hazardous materials control activities. (NFPA 472, 6.6.3, 6.6.3.1, 6.6.4, 6.6.4.1, 6.6.5, pp 966–972)
- Describe how process of absorption can mitigate a hazardous materials incident. (NFPA 472, 6.6.3, 6.6.3.1, 6.6.4, 6.6.4.1, 6.6.5, pp 966–968)
- Describe how the process of adsorption can mitigate a hazardous materials incident. (NFPA 472, 6.6.3, 6.6.3.1, 6.6.4, 6.6.4.1, 6.6.5, pp 966–968)
- Describe how the process of diking can mitigate a hazardous materials incident. (NFPA 472, 6.6.3, 6.6.3.1, 6.6.4, 6.6.4.1, 6.6.5, p 968)
- Describe how the process of damming can mitigate a hazardous materials incident. (NFPA 472, 6.6.3, 6.6.3.1, 6.6.4, 6.6.4.1, 6.6.5, pp 968–969)
- List the three types of dams that may be constructed during a hazardous materials incident. (NFPA 472, 6.6.3, 6.6.3.1, 6.6.4, 6.6.4.1, 6.6.5, p 969)
- Describe how the process of diversion can mitigate a hazardous materials incident. (NFPA 472, 6.6.3, 6.6.3.1, 6.6.4, 6.6.4.1, 6.6.5, p 969)
- Describe how the process of retention can mitigate a hazardous materials incident. (NFPA 472, 6.6.3, 6.6.3.1, 6.6.4, 6.6.4.1, 6.6.5, pp 969–970)
- Describe how the process of vapor dispersion can mitigate a hazardous materials incident. (NFPA 472, 6.6.3, 6.6.3.1, 6.6.4, 6.6.4.1, 6.6.5, pp 970–971)
- Describe how the process of vapor suppression can mitigate a hazardous materials incident. (NFPA 472, 6.6.3, 6.6.3.1, 6.6.4, 6.6.4.1, 6.6.5, p 971)
- List the types of containers and tanks with remote shut-off valves. (NFPA 472, 6.6.3, 6.6.3.1, 6.6.4, 6.6.4.1, 6.6.5, p 971–972)
- Explain why the incident commander might withdraw personnel from the hazardous materials incident. (NFPA 472, 5.5, 5.5.1, 5.6, p 972)
- Describe the recovery phase of a hazardous materials incident.
- Explain the factors that enter into the decision to terminate a hazardous materials incident. (NFPA 472, 6.6.6, p 972)

- Describe the precautions to take if the hazardous materials incident involves potential criminal or terrorist activity. (NFPA 472, 5.4.2, p 972)

Skills Objectives

After studying this chapter, you will be able to perform the following skills:

- Use a multigas meter to provide atmospheric monitoring. (p 964)
- Utilize absorption/adsorption to manage a hazardous materials incident. (NFPA 472, 6.6.3, 6.6.3.1, 6.6.4, 6.6.4.1, 6.6.5, p 968)
- Construct a dike. (NFPA 472, 6.6.3, 6.6.3.1, 6.6.4, 6.6.4.1, 6.6.5, p 968)
- Construct an overflow dam. (NFPA 472, 6.6.3, 6.6.3.1, 6.6.4, 6.6.4.1, 6.6.5, p 969)
- Construct an underflow dam. (NFPA 472, 6.6.3, 6.6.3.1, 6.6.4, 6.6.4.1, 6.6.5, p 969)
- Construct a diversion. (NFPA 472, 6.6.3, 6.6.3.1, 6.6.4, 6.6.4.1, 6.6.5, p 969)
- Construct a retention system. (NFPA 472, 6.6.3, 6.6.3.1, 6.6.4, 6.6.4.1, 6.6.5, p 970)
- Perform vapor dispersion to manage a hazardous materials incident. (NFPA 472, 6.6.3, 6.6.3.1, 6.6.4, 6.6.4.1, 6.6.5, p 971)
- Perform vapor suppression to manage a hazardous materials incident. (NFPA 472, 6.6.3, 6.6.3.1, 6.6.4, 6.6.4.1, 6.6.5, p 971)

Fire Fighter II

Knowledge Objectives

There are no knowledge objectives for Fire Fighter II candidates. NFPA 1001 contains no Fire Fighter II Job Performance Requirements for this chapter.

Skills Objectives

There are no skill objectives for Fire Fighter II candidates. NFPA 1001 contains no Fire Fighter II Job Performance Requirements for this chapter.

Reading and Preparation

- Review all instructional materials, including *Fundamentals of Fire Fighter Skills*, Chapter 33, and all related presentation support materials.
- Review local firefighting protocols for Chapter 33.

Support Materials

- Dry erase board and markers or chalkboard and chalk
- LCD projector, slide projector, overhead projector, and projection screen
- PowerPoint presentation, overhead transparencies, or slides

Enhancements

- Direct the students to visit the Internet at www.FireFighter.jbpub.com for online activities.
- Direct the students to relevant sections in the Student Workbook for application of the content introduced in this chapter.
- Direct the students to take practice/final examinations in the Navigate Test Prep to prepare for examinations.

TEACHING TIPS AND ACTIVITIES

- Stress first responder safety as the number one priority.
- Discuss examples of hazardous materials incidents and scenarios that would be common to the locale of instruction.

CHAPTER 34

Hazardous Materials: Decontamination Techniques

CHAPTER OVERVIEW

The modern fire service responds to a variety of incidents involving the release of potentially hazardous and life-threatening chemicals and agents. The final step in the control of these incidents is to properly decontaminate emergency response crews and victims in a safe and efficient manner.

After students complete this chapter and the related course work, they will be able to describe how secondary contamination determines the need for emergency decontamination. They will also be able to perform emergency decontamination, mass decontamination, and responder decontamination.

OBJECTIVES AND RESOURCES

Fire Fighter I

Knowledge Objectives

After studying this chapter, you will be able to:

- Describe the purpose of decontamination during a hazardous materials incident. (NFPA 472, 5.3.4, p 978)
- Explain how cross-contamination can occur. (NFPA 472, 5.3.4, p 978)
- List the types of decontamination. (NFPA 472, 5.3.4, pp 978–980)
- Describe the process of emergency decontamination. (NFPA 472, 5.3.4, pp 978–979)
- Describe the process of gross decontamination. (NFPA 472, 5.3.4, p 979)
- Describe the process of technical decontamination. (NFPA 472, 5.3.4, p 980)
- Describe the process of mass decontamination. (NFPA 472, 5.3.4, p 980)
- List the methods of decontamination. (NFPA 472, 5.3.4, pp 980–983)
- Describe the process of absorption. (NFPA 472, 5.3.4, p 982)
- Describe the process of adsorption. (NFPA 472, 5.3.4, p 982)
- Describe the process of dilution. (NFPA 472, 5.3.4, p 982)
- Describe the process of disinfection. (NFPA 472, 5.3.4, p 983)
- Describe the proper procedures to follow to safely dispose of items that cannot be decontaminated. (NFPA 472, 5.3.4, p 983)
- Describe the process of solidification. (NFPA 472, 5.3.4, p 983)
- Describe the process of emulsification. (NFPA 472, 5.3.4, p 983)
- Describe the process of vapor dispersion. (NFPA 472, 5.3.4, p 983)
- Describe the process of soil removal. (NFPA 472, 5.3.4, p 983)
- Describe the process of vacuuming. (NFPA 472, 5.3.4, p 983)
- List the general steps of decontamination. (NFPA 472, 5.3.4, p 984)

Skill Objectives

After studying this chapter, you will be able to perform the following skills:

- Perform emergency decontamination. (NFPA 472, 5.3.4, p 979)
- Perform mass decontamination. (NFPA 472, 5.3.4, pp 980, 982)
- Perform responder decontamination. (NFPA 472, 5.3.4, 6.6.4.2, pp 984–985)

Fire Fighter II

Knowledge Objectives

There are no knowledge objectives for Fire Fighter II candidates. NFPA 1001 contains no Fire Fighter II Job Performance Requirements for this chapter.

Skill Objectives

There are no skill objectives for Fire Fighter II candidates. NFPA 1001 contains no Fire Fighter II Job Performance Requirements for this chapter.

Reading and Preparation

- Review all instructional materials, including *Fundamentals of Fire Fighter Skills*, Chapter 34, and all related presentation support materials.
- Review local firefighting protocols for Chapter 34.
- Review course syllabus to confirm the sequence of this chapter for classroom delivery.

Support Materials

- Dry erase board and markers or chalkboard and chalk
- LCD projector, slide projector, overhead projector, and projection screen
- PowerPoint presentation, overhead transparencies, or slides

Enhancements

- Direct the students to visit the Internet at www.FireFighter.jbpub.com for online activities.
- Direct the students to relevant sections in the Student Workbook for application of the content introduced in this chapter.
- Direct the students to take practice/final examinations in the Navigate Test Prep to prepare for examinations.

TEACHING TIPS AND ACTIVITIES

- All audiovisual equipment should be checked before the beginning of class.
- All equipment for Skill Drills 34-1, 34-2, and 34-3 should be staged and ready for use during the demonstration portion of this session.
- At the conclusion of class, all equipment should be cleaned and returned to its proper condition.
- Ensure that the classroom and surrounding area is returned to proper condition.

HAZMAT OPERATIONS
COMPETENCY EVALUATION FORM
Donning a Level B Encapsulated Chemical-Protective Clothing Ensemble (32-1)

Candidate Name:	
Equipment Used:	Level "B" Encapsulated Suit, Nitrile Gloves, CPE Boots, Duct Tape, SCBA

Objective: The candidate shall be able to correctly don a Level B encapsulated chemical-protective clothing ensemble. *NFPA 1072, 5.3.1, 5.4.1, 6.2.4.1, 6.2.5.1, 6.6.1*

		Points Possible	Points Awarded
1	Conducts pre-entry briefing, medical monitoring, and equipment inspection.	1	
2	Pulls on suit to waist level; pulls on chemical boots over top of chemical suit. Pulls suit boot covers over tops of boots.	1	
3	Stands up and dons SCBA and face piece, but does not connect regulator to face piece.	1	
4	Places helmet on head.	1	
5	Dons inner gloves.	1	
6	With assistance, completes donning suit by placing both arms in suit, pulling expanded back piece over SCBA, and placing chemical suit over head.	1	
7	Instructs assistant to connect regulator to SCBA face piece and ensure that air flow is working. Note when you begin to use SCBA.	1	
8	Instructs assistant to close chemical suit by closing zipper and sealing splash flap	1	
9	Reviews hand signals and indicates readiness.	1	
	Total Required:	7	

All critical criteria are bolded and are skills that must be performed successfully. Failure to perform each critical criteria shall result in failure of the station.

You must factually document on the back of the sheet the reason(s) for not awarding points or for checking any critical criteria

Evaluator's Name / Date:	
Evaluator's Signature	

HAZMAT OPERATIONS
COMPETENCY EVALUATION FORM
Doffing a Level B Encapsulated Chemical-Protective Clothing Ensemble (32-2)

Candidate Name:	
Equipment Used:	Level "B" Encapsulated Suit, Nitrile Gloves, CPE Boots, SCBA

Objective: The candidate shall be able to correctly doff a Level B encapsulated chemical-protective clothing ensemble.. *NFPA 1072, 5.3.1, 5.4.1, 6.2.1, 6.6.1*

		Points Possible	Points Awarded
1	Completes decontamination. Proceeds to clean area for suit doffing.	1	
2	Pulls hands and arms out of suit gloves and sleeves, crosses arms in front inside suit.	1	
3	Instructs assistant to open chemical splash flap and suit zipper.	1	
4	Instructs assistant to begin at head and roll suit down and away until suit is below waist level.	1	
5	Sits and instructs assistant to complete rolling down suit and remove outer boots and suit. Rotates on bench to place feet on dry, clean area.	1	
6	Stands and doffs SCBA using quick release method. Face piece should be kept in place while SCBA frame is placed on ground.	1	
7	Takes deep breath, doffs SCBA mask, walks away from clean area.	1	
8	Goes to rehabilitation area for medical monitoring, rehydration, and personal decontamination shower.	1	
	Total Required:	6	

All critical criteria are bolded and are skills that must be performed successfully. Failure to perform each critical criteria shall result in failure of the station.

You must factually document on the back of the sheet the reason(s) for not awarding points or for checking any critical criteria

Evaluator's Name / Date:	
Evaluator's Signature	

HAZMAT OPERATIONS
COMPETENCY EVALUATION FORM
Donning a Level B Non-Encapsulated Chemical-Protective Clothing Ensemble (32-3)

Candidate Name:	
Equipment Used:	Level "B" Non-Encapsulated Suit, Nitrile Gloves, CPE Boots, Duct Tape, SCBA

Objective: The candidate shall be able to correctly don a Level B non-encapsulated chemical-protective clothing ensemble.. *NFPA 1072, 5.3.1, 6.6.1.*

		Points Possible	Points Awarded
1	Conducts pre-entry briefing, medical monitoring, and equipment inspection.	1	
2	Sits down, pulls on suit to waist level; pulls on chemical boots over the top of chemical suit. Pulls suit boot covers over tops of boots or tape if needed.	1	
3	Dons inner gloves.	1	
4	Completes donning suit by placing both arms in suit and pulling suit over shoulders.	1	
5	Instructs assistant to close chemical suit by closing zipper and sealing splash flap.	1	
6	Stands up and dons SCBA and face piece, but does not connect regulator to face piece.	1	
7	With assistance, pulls hood over head and SCBA face piece.	1	
8	Places helmet on head.	1	
9	Pulls gloves over and/or under sleeves, depending on the situation.	1	
10	Instructs assistant to connect regulator to SCBA face piece and ensure air flow is working.	1	
11	Reviews hand signals and indicates readiness.	1	
	Total Required:	8	

All critical criteria are bolded and are skills that must be performed successfully. Failure to perform each critical criteria shall result in failure of the station.

You must factually document on the back of the sheet the reason(s) for not awarding points or for checking any critical criteria

HAZMAT OPERATIONS
COMPETENCY EVALUATION FORM
Doffing a Level B Non-Encapsulated Chemical-Protective Clothing Ensemble (32-4)

Candidate Name:	
Equipment Used:	*Level "B" Non-Encapsulated Suit, Nitrile Gloves, CPE Boots, Duct Tape, SCBA*

Objective: The candidate shall be able to correctly doff a Level B non-encapsulated chemical-protective clothing ensemble. *NFPA 1072, 5.3.1, 6.6.1.*

		Points Possible	*Points Awarded*
1	*Completes decontamination. Proceeds to clean area for suit doffing.*	*1*	
2	*Stands and doffs SCBA. Keeps face piece in place while SCBA frame is placed on ground.*	*1*	
3	*Instructs assistant to open chemical splash flap and suit zipper.*	*1*	
4	*Removes hands and arms from suit gloves (except inner gloves) and sleeves, and crosses arms in front inside suit.*	*1*	
5	*Instructs assistant to begin at head and roll suit down and away until suit is below waist level.*	*1*	
6	*Sits down and instructs assistant to complete rolling down suit and remove outer boots and suit. Rotates on bench to place feet on dry, clean area. Assistant helps remove inner gloves.*	*1*	
7	*Removes SCBA face piece.*	*1*	
8	*Goes to rehabilitation area.*	*1*	
	Total Required:	*6*	

All critical criteria are bolded and are skills that must be performed successfully. Failure to perform each critical criteria shall result in failure of the station.

You must factually document on the back of the sheet the reason(s) for not awarding points or for checking any critical criteria

Evaluator's Name / Date:	
Evaluator's Signature	

HAZMAT OPERATIONS
COMPETENCY EVALUATION FORM
Donning a Level C Chemical-Protective Clothing Ensemble (32-5)

Candidate Name:	
Equipment Used:	Level "B" Non-Encapsulated Suit, Nitrile Gloves, CPE Boots, Duct Tape, SCBA, APR & PAPR

Objective: The candidate shall be able to correctly don a Level C chemical-protective clothing ensemble. *NFPA 1072, 5.3.1, 6.6.1.*

		Points Possible	Points Awarded
1	Conducts pre-entry briefing, medical monitoring, and equipment inspection.	1	
2	Sits, pulls suit on to waist level; pulls on chemical boots over top of chemical suit. Pulls suit boot covers over tops of boots.	1	
3	With assistance, completes donning suit by placing both arms in suit and pulling suit over shoulders.	1	
4	Assistant closes chemical suit by closing zipper and sealing splash flap.	1	
5	Dons inner gloves.	1	
6	Stands up and dons PAPR and APR/PAPR face piece.	1	
7	With assistance, pulls hood over head and APR/PAPR face piece.	1	
8	Places helmet on head.	1	
9	Reviews hand signals and indicates readiness.	1	
	Total Required:	7	

All critical criteria are bolded and are skills that must be performed successfully.
Failure to perform each critical criteria shall result in failure of the station.

You must factually document on the back of the sheet the reason(s) for not awarding points or for checking any critical criteria

Evaluator's Name / Date:	
Evaluator's Signature	

HAZMAT OPERATIONS
COMPETENCY EVALUATION FORM
Doffing a Level C Chemical-Protective Clothing Ensemble (32-6)

Candidate Name:	
Equipment Used:	Level "C" Non-Encapsulated Suit, Nitrile Gloves, CPE Boots, Duct Tape, SCBA, APR & PAPR

Objective: The candidate shall be able to correctly doff a Level C chemical-protective clothing ensemble. *NFPA 1072, 5.3.1, 6.6.1.*

		Points Possible	Points Awarded
1	Completes decontamination. Proceeds to clean area for suit doffing.	1	
2	Instructs assistant to open chemical splash flap and suit zipper.	1	
3	Removes hands and arms from suit gloves (except inner gloves) and sleeves, and crosses arms in front inside suit.	1	
4	Instructs assistant to roll suit down and away until suit is below waist level.	1	
5	Sits down. Instructs assistant to complete rolling down suit and take outer boots and suit away.	1	
6	Instructs assistant to help remove inner gloves.	1	
7	Rotates on bench to place feet on dry, clean area.	1	
8	Removes APR/PAPR.	1	
9	Goes to rehabilitation area for medical monitoring, rehydration, and personal decontamination shower.	1	
	Total Required:	7	

All critical criteria are bolded and are skills that must be performed successfully. Failure to perform each critical criteria shall result in failure of the station.

You must factually document on the back of the sheet the reason(s) for not awarding points or for checking any critical criteria

Evaluator's Name / Date:	
Evaluator's Signature	

HAZMAT OPERATIONS
COMPETENCY EVALUATION FORM
Donning a Level D Chemical-Protective Clothing Ensemble (32-7)

Candidate Name:	
Equipment Used:	Level "D" CPE Suit, Nitrile Gloves, CPE Boots, Duct Tape

Objective: The candidate shall be able to correctly don a Level D chemical-protective clothing ensemble. *NFPA 1072, 5.3.1, 6.6.1.*

		Points Possible	Points Awarded
1	Conducts pre-entry briefing, medical monitoring, and equipment inspection.	1	
2	Dons Level D suit.	1	
3	Dons boots.	1	
4	Dons safety glasses or chemical goggles.	1	
5	Dons hard hat.	1	
6	Dons gloves, face shield, and any other equipment required.	1	
	Total Required:	5	

All critical criteria are bolded and are skills that must be performed successfully. Failure to perform each critical criteria shall result in failure of the station.

You must factually document on the back of the sheet the reason(s) for not awarding points or for checking any critical criteria

Evaluator's Name / Date:	
Evaluator's Signature	

HAZMAT OPERATIONS
COMPETENCY EVALUATION FORM
Doffing a Level D Chemical-Protective Clothing Ensemble (32-8)

Candidate Name:	
Equipment Used:	Level "D" CPE Suit, Nitrile Gloves, CPE Boots, Duct Tape

Objective: The candidate shall be able to correctly doff a Level D chemical-protective clothing ensemble. *NFPA 1072, 5.3.1, 6.6.1.*

		Points Possible	Points Awarded
1	Completes decontamination. Proceeds to clean area for suit doffing.	1	
2	Removes gloves and hard hat.	1	
3	Begins at head and rolls suit down and away until suit is below waist level.	1	
4	Sits. Assistant completes rolling down suit and takes boots and suit away.	1	
5	Instructs assistant to help remove inner gloves.	1	
6	Rotates on bench to place feet on dry, clean area.	1	
7	Goes to rehabilitation area for medical monitoring and rehydration.	1	
	Total Required:	5	

All critical criteria are bolded and are skills that must be performed successfully. Failure to perform each critical criteria shall result in failure of the station.

You must factually document on the back of the sheet the reason(s) for not awarding points or for checking any critical criteria

Evaluator's Name / Date:	
Evaluator's Signature	

HAZARDOUS MATERIALS OPERATIONS COMPETENCY EVALUATION FORM
Using a Multi-Gas Meter to Provide Atmospheric Monitoring 33-1
*Optional Skill

Candidate Name:	
Equipment Used:	4-Gas Meter

Objective: The candidate shall be able to correctly use and give basic interpretation of a multi-gas meter to monitor atmospheric conditions. *NFPA 1072,*

		Possible Points	Points Awarded
1.	Understands manufacturer's recommendations and local SOPs. Ensures that instruments have been calibrated and tested prior to use.	1	
2.	Turns on analyzer, allows instrument to warm up, and zeros it in a clean atmospheric environment.	1	
3.	Understands which hazards and conditions to avoid.	1	
4.	Approaches hazardous material and monitors atmosphere.	1	
5.	Notes readings and interprets meaning of following conditions: oxygen increase/decrease, (LEL)/LFL increase, carbon monoxide increase, hydrogen sulfide increase.	1	
6.	Allows meter to run in fresh air. Follows appropriate procedures to turn meter off and return it to service.	1	
		5	

All critical criteria are bolded and are skills that must be performed successfully. Failure to perform each critical criteria shall result in failure of the station.

You must factually document on the back of the sheet the reason(s) for not awarding points or for checking any critical criteria

Evaluator's Name / Date:	
Evaluator's Signature	

HAZARDOUS MATERIALS OPERATIONS COMPETENCY EVALUATION FORM
Using Absorption/Adsorption to Manage a Hazardous Materials Incident 33-2

Candidate Name:	
Equipment Used:	Absorbent Pads & Booms, Speedi-Dry

Objective: The candidate shall be able to correctly use absorption/adsorption for product control of a simulated spill. *NFPA 1072, 6.6.1.*

		Possible Points	Points Awarded
1.	Collects basic materials • Absorbents • Adsorbents • Absorbent Pads • Adsorbent Booms	4	
2.	Decides which material is best suited for use with spilled product.	1	
3.	Assesses location of spill and stays clear of any spilled product.	1	
4.	Applies appropriate material to control and contain spilled material.	1	
5.	Maintains materials and takes appropriate steps for their disposal.	1	
		6	

All critical criteria are bolded and are skills that must be performed successfully. Failure to perform each critical criteria shall result in failure of the station.

You must factually document on the back of the sheet the reason(s) for not awarding points or for checking any critical criteria

Evaluator's Name / Date:	
Evaluator's Signature	

HAZARDOUS MATERIALS OPERATIONS COMPETENCY EVALUATION FORM
Constructing a Dike 33-3

Candidate Name:	
Equipment Used:	Sand or Speedi-Dry, Brooms, Shovels, Plastic Sheeting, Running Water. Booms or Rubber Diking.

Objective: The candidate shall be able to correctly construct a dike as a product control solution for a released hazardous material. *NFPA 1072, 6.6.1.*

		Possible Points	Points Awarded
1.	Determines best location for dike based on spilled material and topography conditions.	1	
2.	Digs depression in channel 6 to 8 inches deep.	1	
3.	Uses plastic to line bottom of depression and applies sufficient plastic to cover dike wall.	1	
4.	Build a dam with sandbags or other available materials.	1	
5.	Installs plastic to top of dike and secures it with additional sandbags.	1	
6.	Completes dike installation and ensures size will contain all of spilled product.	1	
		5	

All critical criteria are bolded and are skills that must be performed successfully. Failure to perform each critical criteria shall result in failure of the station.

You must factually document on the back of the sheet the reason(s) for not awarding points or for checking any critical criteria

Evaluator's Name / Date:	
Evaluator's Signature	

HAZARDOUS MATERIALS OPERATIONS COMPETENCY EVALUATION FORM
Constructing an Overflow Dam 33-4

Candidate Name:	
Equipment Used:	Sand or Speedi-Dry, Brooms, Shovels, Plastic Sheeting, Running Water. Booms or Rubber Diking, Plastic Pipe

Objective: The candidate shall be able to correctly construct an overflow dam as a product control solution based on the specific gravity of the released hazardous material. *NFPA 1072, 6.6.1.*

		Possible Points	Points Awarded
1.	Based on the spilled material having a specific gravity greater than 1, determines the need for an overflow dam.	1	
2.	Digs a depression in the channel 6 to 8 inches (15 to 20 cm) deep.	1	
3.	Uses plastic to line the bottom of the depression.	1	
4.	Builds a dam with sandbags or other available materials.	1	
5.	Installs two to three lengths of 3- to 4-inch (7- to 10-cm) plastic pipe horizontally on top of the dam. Adds more sandbags on top of the dam if available.	1	
6.	Completes the dam installation and ensures the size will allow the proper flow.	1	
		5	

All critical criteria are bolded and are skills that must be performed successfully. Failure to perform each critical criteria shall result in failure of the station.

You must factually document on the back of the sheet the reason(s) for not awarding points or for checking any critical criteria

Evaluator's Name / Date:	
Evaluator's Signature	

HAZARDOUS MATERIALS OPERATIONS COMPETENCY EVALUATION FORM
Constructing an Underflow Dam 33-5

Candidate Name:	
Equipment Used:	Sand or Speedi-Dry, Brooms, Shovels, Plastic Sheeting, Running Water. Booms or Rubber Diking, Plastic Pipe

Objective: The candidate shall be able to correctly construct an underflow dam as a product control solution based on the specific gravity of the released hazardous material. *NFPA 1072, 6.6.1*

		Possible Points	Points Awarded
1.	Based on the spilled material having a specific gravity less than 1, determines the need for an underflow dam.	1	
2.	Digs a depression in the channel 6 to 8 inches (15 to 20 cm) deep.	1	
3.	Uses plastic to line the bottom of the depression.	1	
4.	Builds a dam with sandbags or other available materials.	1	
5.	Installs two to three lengths of 3- to 4-inch (7- to 10-cm) plastic pipe at a 20- to 30-degree angle on top of the dam at a level suitable to ensure that clean water passes through the pipes.	1	
6.	Adds more sandbags on top of dam if available.	1	
7.	Completes the dam installation and ensures its size will allow the proper flow.	1	
		5	

All critical criteria are bolded and are skills that must be performed successfully. Failure to perform each critical criteria shall result in failure of the station.

You must factually document on the back of the sheet the reason(s) for not awarding points or for checking any critical criteria

Evaluator's Name / Date:	
Evaluator's Signature	

HAZARDOUS MATERIALS OPERATIONS COMPETENCY EVALUATION FORM
Constructing a Diversion 33-6

Candidate Name:	
Equipment Used:	Sand or Speedi-Dry, Brooms, Shovels, Plastic Sheeting, Running Water. Booms or Rubber Diking, Plastic Pipe

Objective: The candidate shall be able to correctly construct a diversion dam as a product control solution for a released hazardous material. *NFPA 1072, 6.6.1.*

		Possible Points	Points Awarded
1.	Determines best location for diversion based on spilled material and topography conditions.	1	
2.	Uses sandbags or other materials to divert product flow to area of fewer hazards.	1	
3.	Stays clear of product flow.	1	
4.	Monitors diversion channel to ensure integrity of system.	1	
		3	

All critical criteria are bolded and are skills that must be performed successfully. Failure to perform each critical criteria shall result in failure of the station.

You must factually document on the back of the sheet the reason(s) for not awarding points or for checking any critical criteria

Evaluator's Name / Date:	
Evaluator's Signature	

HAZARDOUS MATERIALS OPERATIONS COMPETENCY EVALUATION FORM
Using Retention to Manage a Hazardous Materials Incident 33-7

Candidate Name:	
Equipment Used:	Sand or Speedi-Dry, Brooms, Shovels, Plastic Sheeting, Running Water. Booms or Rubber Diking, Plastic Pipe

Objective: The candidate shall be able to correctly construct a retention area as a product control solution for a released hazardous material. *NFPA 1072, 6.6.1.*

		Pass	Fail
1.	Determines best location for retention system, based on spilled material and topography conditions.	1	
2.	Digs a depression in the channel to serve as retention area.	1	
3.	Uses plastic to line bottom of depression.	1	
4.	Uses sandbags or other materials to hold plastic in place.	1	
5.	Stays clear of product flow.	1	
6.	Monitors retention system to ensure integrity.	1	
		5	

All critical criteria are bolded and are skills that must be performed successfully. Failure to perform each critical criteria shall result in failure of the station.

You must factually document on the back of the sheet the reason(s) for not awarding points or for checking any critical criteria

Evaluator's Name / Date:	
Evaluator's Signature	

HAZARDOUS MATERIALS OPERATIONS COMPETENCY EVALUATION FORM
Using Dilution to Manage a Hazardous Materials Incident 33-8

Candidate Name:	
Equipment Used:	Smoke Fogger, 1 ¾" Hoseline, Nozzle, Wye, Hydrant Wrench

Objective: The candidate shall be able to correctly use dilution to control a hazardous materials incident.
NFPA 1072, 6.6.1.

		Pass	Fail
1.	Determines viability of a dilution operation, based on the spilled material's characteristics and the size of the spill.	1	
2.	Obtains guidance from hazardous materials technician.	1	
3.	Ensures that water used will not overflow and affect other product-control activities.	1	
4.	Adds small amounts of water from a distance to dilute the product.	1	
5.	Contacts hazardous materials technician if any additional issues arise.	1	
		4	

All critical criteria are bolded and are skills that must be performed successfully. Failure to perform each critical criteria shall result in failure of the station.

You must factually document on the back of the sheet the reason(s) for not awarding points or for checking any critical criteria

Evaluator's Name / Date:	
Evaluator's Signature	

HAZARDOUS MATERIALS OPERATIONS COMPETENCY EVALUATION FORM
Using Vapor Dispersion to Manage a Hazardous Materials Incident 33-9

Candidate Name:	
Equipment Used:	Smoke Fogger, 1 ¾" Hoseline, Nozzle, Wye, Hydrant Wrench

Objective: The candidate shall be able to correctly use vapor dispersion for product control. *NFPA 1072, 6.6.1.*

		Possible Points	Points Awarded
1.	Determines viability of dispersion operation based on characteristics of released material, size of release, and topography. Stays upwind and uphill.	1	
2.	Uses a four-gas monitor to identify a safe work area.	1	
3.	Ensures that ignition sources in the area have been removed if the material is flammable.	1	
4.	Uses water from a distance to disperse vapors.	1	
5.	Monitors environment until vapors have been adequately dispersed.	1	
		4	

All critical criteria are bolded and are skills that must be performed successfully. Failure to perform each critical criteria shall result in failure of the station.

You must factually document on the back of the sheet the reason(s) for not awarding points or for checking any critical criteria

Evaluator's Name / Date:	
Evaluator's Signature	

HAZARDOUS MATERIALS OPERATIONS COMPETENCY EVALUATION FORM
Using Vapor Suppression to Manage a Hazardous Materials Incident 33-10

Candidate Name:	
Equipment Used:	Smoke Fogger, 1 ¾" Hoseline, Nozzle, Wye, Hydrant Wrench

Objective: The candidate shall be able to correctly use vapor suppression for product control. *NFPA 1072, 6.6.1.*

		Possible Points	Points Awarded
1.	Determines viability of a vapor suppression operation based on characteristics of released material, size of leak, and topography.	1	
2.	Uses a four-gas monitor to identify safe work area.	1	
3.	Ensures that ignition sources in area have been removed.	1	
4.	Uses foam stream from distance to suppress vapors.	1	
5.	Monitors environment until vapors have been adequately dispersed.	1	
		4	

All critical criteria are bolded and are skills that must be performed successfully. Failure to perform each critical criteria shall result in failure of the station.

You must factually document on the back of the sheet the reason(s) for not awarding points or for checking any critical criteria

Evaluator's Name / Date:	
Evaluator's Signature	

COURSE NAME HAZMAT OPERATIONS
COMPETENCY EVALUATION FORM
Performing Emergency Decontamination (34-1)

Candidate Name:	
Equipment Used:	Level B Suit, Hoseline with nozzle

Objective: The candidate shall be able to correctly conduct emergency decontamination on a victim who has an unexpected exposure or contamination of product. *NFPA 1072, 5.3.1, 5.5.1.*

		Points Possible	Points Awarded
1	Wears appropriate PPE.	1	
2	Stays clear of product. Does not make physical contact with it.	1	
3	Makes an effort to contain runoff by directing victims out of hazard zone and into suitable decontamination location.	1	
4	Flushes victim to remove product from victim's clothing.	1	
5	Instructs victim in removing contaminated clothing.	1	
6	Flushes contaminated victim.	1	
7	Assists or obtains medical treatment for victim, and arranges for victim's transport.	1	
	Total Required:	5	

All critical criteria are bolded and are skills that must be performed successfully. Failure to perform each critical criteria shall result in failure of the station.

You must factually document on the back of the sheet the reason(s) for not awarding points or for checking any critical criteria

Evaluator's Name / Date:	
Evaluator's Signature	

COURSE NAME HAZMAT OPERATIONS
COMPETENCY EVALUATION FORM
Performing Mass Decontamination
(34-2)

Candidate Name:	
Equipment Used:	

Objective: The candidate shall be able to correctly set up and conduct mass decontamination. *NFPA 1072, 5.3.1, 6.3.1.*

		Points Possible	Points Awarded
1	Wears appropriate PPE to protect against chemical threat.	1	
2	Stays clear of product and does not make physical contact with it.	1	
3	Makes an effort to contain runoff by directing victims out of hazard zone and into suitable location for decontamination.	1	
4	Sets up appropriate type of mass-decontamination system based on type of apparatus available.	1	
5	Instructs victims to walk through decontamination area and remove contaminated clothing.	1	
6	Flushes contaminated victims.	1	
7	Directs decontaminated victims to triage area.	1	
	Total Required:	5	

All critical criteria are bolded and are skills that must be performed successfully. Failure to perform each critical criteria shall result in failure of the station.

You must factually document on the back of the sheet the reason(s) for not awarding points or for checking any critical criteria

Evaluator's Name / Date:	
Evaluator's Signature	