
Pre-Lecture

I. You are the Provider

Time: 10 minutes

Small Group Activity/Discussion

Purpose

This activity is designed to help introduce your students to the content of this chapter.

Instructor Directions

1. Direct students to read the “You are the Provider” scenario found throughout Chapter 50.
2. You may wish to assign students to a partner or a group. Direct them to review the discussion questions at the end of the scenario and prepare a response to each question. Facilitate a class dialogue centered on the discussion questions.
3. You may also assign this as an activity and ask students to hand in their comments on a separate piece of paper.

Lecture

I. Introduction

Time: 5 minutes

Slide: 2

Lecture

A. Proliferation of Hazardous Materials

1. Manufacture, transport, storage, use, and disposal of thousands of potentially toxic substances
2. 15,000 hazardous materials releases occur each year.
 - a. Highway transportation incidents

II. Laws and Regulations

Time: 5 minutes

Slides: 3–5

Lecture

A. Overview

1. Training requirements and standards put forth by Occupational Safety and Health Administration (OSHA)
 - a. CFR 1910.120 Hazardous Waste Operations and Emergency Response Standard
2. National Fire Protection Association (NFPA)
 - a. NFPA 473: Standard for Competencies for EMS Personnel Responding to Hazardous Materials Incidents
3. All EMS personnel should receive training to the basic Awareness level.
 - a. Those more involved will need to be trained to the Operations or Technician level.
4. Awareness level
 - a. First to discover a hazardous materials release
 - b. Recognizing potential hazards, initiating protective measures for yourself and your community, and requesting additional response resources
5. Operations level (EMS/HM Level 1 Responder)
 - a. Perform defensive actions against the hazardous material.
 - b. Patient care activities in the cold zone
6. Technician level (EMS/HM Level 2 Responder)
 - a. Patient care activities in the warm zone
 - b. Coordinate activities at a hazardous materials incident and provide medical support for hazardous materials teams.
7. Federal, state, and local rules govern the use, storage, and transportation of hazardous materials.

III. Paramedics and Hazardous Materials Incidents

Time: 15 minutes

Slides: 6–13

Lecture

A. Overview

1. Know how and when to request medical backup and a hazardous materials team.
2. A hazardous materials incident may include:
 - a. A truck or train crash in which a substance is leaking from a tank truck or railroad tank car
 - b. A leak, fire, or other emergency at an industrial plant, refinery, or other complex where chemicals or explosives are produced, used, or stored
 - c. A leak or rupture of an underground natural gas pipe
 - d. Deterioration of underground fuel tanks and seepage of oil or gasoline into the surrounding ground
 - e. Buildup of methane or other by-products of waste decomposition in sewers or sewage processing plants
 - f. A motor vehicle crash in which a gas tank has ruptured
3. Warning signs, placards, or labels are found in the following locations:
 - a. On buildings or in areas where hazardous materials are produced, used, or stored

- b. On trucks and railroad cars that carry any hazardous material
- c. On barrels or boxes that contain hazardous material
4. The most important job is to identify the hazardous material.
5. Maintain a high index of suspicion as you follow up on your first assessment of the scene.
 - a. Papers identifying cargo
6. Identify leaks or spills of hazardous materials by the following:
 - a. A visible cloud or strange-looking smoke resulting from the escaping substance
 - b. A leak or spill from a tank, container, truck, or railroad car with or without hazardous material placards or labels
 - c. An unusual, strong, noxious, acrid odor in the area
7. If you approach a scene where more than one person has collapsed or is unconscious or in respiratory distress, you should assume that there has been a hazardous material leak or spill and that it is unsafe to enter the area.
 - a. Dead heroes can't save lives.
 - b. Stop at a safe distance, upwind from the scene.
 - c. Call for a hazardous materials team.
8. Provide as much information as possible including:
 - a. Specific location
 - b. Size and shape of containers of the hazardous material
 - c. What you've observed
 - d. What you've been told has occurred

B. You are the Provider

Slide: 14

Lecture/Discussion

1. Present the case study provided on the slide:
 - a. You are dispatched to a motor vehicle collision on a stretch of highway.
 - b. You've parked a safe distance away and you notice that the scene involves a tractor trailer that is transporting an unknown chemical.
 - c. The unknown chemical is leaking onto the ground and there is a cloud hovering around the truck.
 - d. Ideally the dispatcher would have told you about the tractor trailer; however, dispatchers can only give you the information they are given. You are an experienced paramedic though, and you know to enter all scenes safely and enter all MVCs with caution.

IV. Hazardous Materials Size-up

Time: 5 minutes

Slides: 15, 16

Lecture

A. Overview

1. If dispatch says there could be a hazardous material involved, assume that there is.
2. If a commercial vehicle or a noncommercial vehicle and a train are involved, maintain a high index of suspicion.
 - a. Tractor trailers, tanker trucks, alternative fuel vehicles, and pesticide control vehicles
3. Industrial facilities, warehouses, tank farms, pipeline facilities, manufacturing operations, and chemical plants
 - a. Agricultural operations and supply stores
4. Consider the possibility of terrorist incidents in places such as large offices, government buildings, and shopping malls.
5. Hazardous materials may be solids, liquids, or gases.
6. Standard rule of thumb for hazardous materials scene:
 - a. If the entire scene cannot be covered by your thumb held out at arm's length, you are too close!

V. Identification of Hazardous Materials

Time: 15 minutes

Slides: 17–25

Lecture

A. Overview

1. Identification of the specific material involved
 - a. Critical to prepare for the possible health effects on patients and to alert the EMS teams dispatched to help you
 - b. Try to read the marking and placards required at hazardous materials storage sites and on vehicles.
 - c. Material safety data sheet (MSDS): permanent manufacturing or storage facility required to have one

B. Hazardous Materials Placarding System

1. Most common is the four-digit numbers that are part of the United Nations/North American coding system for identification of hazardous materials
2. Symbols used to help identify different classes of hazardous materials including:
 - a. Explosives
 - b. Poisonous gases
 - c. Flammable liquids and solids
 - d. Oxidizers and organic peroxides
 - e. Radioactive materials
 - f. Corrosives
3. *Emergency Response Guidebook (ERG)*
 - a. US Department of Transportation
 - b. Most recent edition should be carried on every emergency response vehicle

4. Other sources of information
 - a. Bill of lading: carried by the truck driver
 - b. Waybill: carried by the conductor of a train
 - c. CHEMTREC (Chemical Transportation Emergency Center): operates a 24-hour telephone line and has an extensive database to assist emergency responders
 - d. Environmental Protection Agency's chemical compatibility chart

C. Initial Isolation and Protection Distance

1. Safety perimeters necessary for hazardous materials that are toxic and those that pose danger of fire or explosion
 - a. Safe distance is a lot further away than most people would believe.
 - b. Uphill and upwind from any hazardous materials
2. Hazardous materials teams
 - a. Air monitoring equipment to help determine explosive limits, oxygen levels, and the concentration of hydrogen sulfide and carbon monoxide
 - b. Determine the pH of spills.
 - c. May have capacity for specific agent testing
 - d. Computer-aided management of emergency operations (CAMEO): helps predict downwind concentrations of hazardous materials based on environmental factors entered into a computer model

D. Classification of Hazardous Materials

1. NFPA 704: hazardous materials classification
 - a. Ranks hazardous materials according to health hazard or toxicity levels, fire hazard, chemical reactive hazard, and special hazards for permanent facilities that store hazardous materials
2. Before entering any potential hazardous materials area, you must know:
 - a. The type and degree of health, fire, and reactive protection needed to operate safely near these substances
 - b. Specialized personal protective equipment
3. Toxicity level
 - a. Measures the health risk that a substance poses to someone who comes into contact with it
 - b. Level 0: materials that would cause little, if any, health hazard if you came into contact
 - c. Level 1: materials that would cause irritation on contact but only mild residual injury, even without treatment (self-contained breathing apparatus [SCBA] required)
 - d. Level 2: materials that could cause temporary damage or residual injury unless prompt medical treatment is provided (SCBA required)
 - e. Level 3: materials that are extremely hazardous to health (full protective gear so that none of your skin surface is exposed)
 - f. Level 4: materials that are so hazardous that minimal contact will cause death (specialized gear that is designed for protection against that particular hazard)
 - g. See Table 50-1 Toxicity Levels of Hazardous Materials.

E. You are the Provider (continued)

Slide: 26

Lecture/Discussion

1. Continue reading the case study provided on the slide:
 - a. You have taken your first responder HazMat awareness class and you know to look for placards on the truck.
 - b. You find the placard number and look in your *Emergency Response Guidebook* to see what kind of chemical it is.
 - c. *What should you do as soon as you see the chemical?*
 - You need to call for other resources. Your training in HazMat Awareness is not enough to be able to enter this scene and properly take care of the patient(s) involved.

VI. Hazardous Materials Scene Management

Time: 5 minutes

Slides: 27–29

Lecture

A. Establishing Safety Zones

1. Hazardous materials incident steps
 - a. Notify your dispatcher and any other EMS, fire, or law enforcement responders that you can.
 - b. Identify and tell the others what you observe about wind direction and terrain features.
 - c. Approach and position yourself upwind and uphill from the scene.
 - d. Keep in mind the rule of thumb.
 - e. Isolate the incident as much as possible to avoid the risk of further harm to other people.
2. Hazardous materials specialists will establish several zones.
 - a. Hot zone: contamination zone where only properly trained rescuers wearing appropriate personal protective equipment (PPE) are allowed
 - b. Warm zone: surrounds the hot zone; entered only by trained hazardous materials specialists wearing appropriate PPE (urgent life-saving care)
 - c. Cold zone: further buffer from the hazards; used for triage and treatment

B. Personnel Safety

1. Be familiar with the PPE used at hazardous materials scenes..
2. PPE level A through D
 - a. Most paramedic ambulances do not carry this equipment.
 - b. Level A: greatest protection from exposure to hazardous substances (looks like an astronaut's suit); "fully encapsulating"
 - c. Level B: protection from splashes and inhaled toxins (worn with SCBA)

- d. Level C: protection against a known agent; splash protection and air-purifying respirator with specific filters; eye and hand protection and foot coverings
- e. Level D: fire fighters' turnout gear (cold zone)

VII. Contamination and Toxicology

Time: 10 minutes

Slides: 30–33

Lecture

A. Primary and Secondary Contamination

- 1. Primary contamination
 - a. Direct exposure of a patient to a hazardous material
- 2. Secondary contamination
 - a. Hazardous material is transferred to a person from another person or from contaminated objects.

B. Routes of Exposure

- 1. Dermal exposure
 - a. A material that is not volatile and does not give off vapor touches the patient's skin.
 - b. Local effect: reddening of the skin or the formation of blisters
 - c. Systemic effect: hazardous material is absorbed through the skin; toxic effect on the neurologic, renal, or hepatic system.
 - d. Dose effect principle: the greater the length of time or the greater the concentration of the material, the greater the effect probably will be on the human body.
 - e. Synergistic effect: two hazardous materials interact, producing a much greater impact than either substance alone.
- 2. Respiratory exposure
 - a. Efficient, rapid, and lethal
 - b. Gases formed when liquids spill
 - c. Dust-like powders
- 3. Parenteral exposure
 - a. Injected into the body or absorbed through an open wound
- 4. Gastrointestinal exposure
 - a. Patient swallows a hazardous material
 - b. Often deliberate

VIII. Chemical and Toxicology Terminology

Time: 5 minutes

Slides: 34, 35

Lecture

A. Chemical Terms

1. Vapor pressure
 - a. Increases as air temperature becomes hotter
2. Vapor density
 - a. Compares the hazardous material gas to air
 - b. If heavier than air, the toxin will sink into little valleys and ditches.
 - c. If lighter than air, the toxin rises and dissipates.
3. Flash point
 - a. Temperature at which a hazardous material's vapors can be ignited by a spark
4. Ignition temperature
 - a. Warmer than the flash point
 - b. Vapors burst into sustained burning
5. Lower explosive limit
 - a. Concentration at which it burns in the air or explodes
6. Upper explosive limit
 - a. Concentration so high that there will not be enough oxygen to support the combustion in air
7. Water reactive or water soluble
8. Specific gravity
 - a. Whether or not the hazardous material will sink or float in water

B. Toxicology Terms

1. Threshold limit value (TLV)
 - a. Maximum concentration of a toxin that someone can be exposed to for a 40-hour work week
2. Threshold limit value—short-term permissible limit (TLV-STEL)
 - a. Concentration that a person can be exposed to for a limited number of brief time periods
3. Threshold limit value—ceiling value (TLV-CL)
 - a. Concentration that a person should never be exposed to
4. Permissible exposure limit (PEL)
 - a. Maximum concentration of a chemical that a person may be exposed to under OSHA regulations
5. Lethal dose (LD)
 - a. The amount of the substance sure to cause death
6. Immediately dangerous to life and health (IDLH)
 - a. Indicates a respirator is mandatory
 - b. The atmospheric concentration of any toxic, corrosive, or asphyxiant substance will pose an immediate threat to life, irreversible or delayed adverse effects, or serious interference for a team member's attempt to escape from the dangerous atmosphere.

C. You are the Provider (continued)

Slide: 36

Lecture/Discussion

1. Continue reading the case study provided on the slide:
 - a. You await the HazMat team. When they arrive they remove and decontaminate the patient.
 - b. You've been waiting in the ambulance a safe distance away.
 - c. *What do you need to know from the HazMat team?*
 - You need to know what kind of chemical it was. Did the patient ingest the chemical, or how was the patient exposed to this chemical? All of these are important to know when treating patients involved in a hazardous materials incident.

IX. Decontamination and Treatment

Time: 25 minutes

Slides: 37–51

Lecture

A. Decontamination

1. Depends on the type of hazardous material involved, the stability of the scene, and the number, condition, and location of the patients
 - a. Reduce the dose of hazardous materials in contact with the patient.
 - b. Decrease the risk of secondary contamination to others.
2. Protection of the environment during decontamination
 - a. Containment of runoff
3. Four methods
 - a. Dilution: copious amounts of water to flush the contaminant from the skin or eyes
 - b. Absorption: large pads soak up liquid and remove it from the patient (towels)
 - c. Neutralization: use of a chemical to change the hazardous material into less harmful substances
 - d. Disposal: as much clothing and equipment removed as possible to reduce the magnitude of the problem
4. Emergency decontamination in “fast-breaking” situations
 - a. Ambulatory patient approaching the ambulance or attempting to leave the scene
 - b. PPE
 - c. Instruct the patient to disrobe and remove as much of the hazardous materials from their bodies as they can.
 - d. If the material is a powder it should be brushed away.
 - e. If it is water reactive, no water should be used.
 - f. Unmanned hose streams to douse the patients with large amounts of water (decontamination corridor)
5. Technical decontamination
 - a. Eight-step process carried out by trained personnel

- b. Rescuers access the patients in the hot zone and remove as much of the contamination as possible as they move patients to the decontamination corridor.
- c. Contaminated tools, equipment, and clothing should be left behind at the hot zone end of the decontamination corridor.
- d. Patients and hazardous materials personnel are showered and washed using water, brushes, soap, or other appropriate decontamination agents.
- e. Rescuers continue to decontaminate themselves.
- f. Rescuers remove their contaminated protective clothing and equipment, placing these items into a bag or receptacle for later decontamination or disposal.
- g. Depending on the potential of the situation, the rescuers may need to take off their clothing as well.
- h. Personnel shower to further reduce the potential for contamination.
- i. Entry team personnel undergo medical evaluation.

B. Treatment of Patients Exposed to Hazardous Materials

1. Special considerations
 - a. Invasive procedures should be minimized.
2. References and technical expertise
 - a. *Emergency Response Guidebook*
 - b. CHEMTREC
 - c. Poison control centers
 - d. Agency for Toxic Substance Registry
 - e. Medical control
3. Corrosives: acids and bases
 - a. Chemicals that include both acids and bases
 - b. Acids have a high pH.
 - c. Bases have a low pH.
 - d. Can cause severe burns
 - e. Signs and symptoms include skin irritation, reddening or other discoloration, and blistering.
 - f. Decontamination of materials with a low pH will require more time to flush from the skin.
 - g. Treatment symptomatic
4. Hydrocarbon solvents
 - a. Give off potent vapors that can be inhaled or absorbed through the skin
 - b. Respiratory exposure can cause immediate pulmonary symptoms.
 - c. Prolonged dermal exposure can cause cardiac dysrhythmias and seizures.
5. Pulmonary irritants
 - a. Gases that react with the moisture of mucous membranes to cause irritation
 - b. Minor to severe or choking
 - c. Chlorine gas and ammonia
6. Pesticides

- a. Interfere with the enzyme cholinesterase, which promotes uptake of the neurotransmitter acetylcholine
 - b. Runaway nerve stimulation causes SLUDGE: Salivation, Lacrimation, Urination, Gastrointestinal activity, and Emesis
7. Chemical asphyxiants
- a. Any gas that displaces oxygen from the atmosphere
 - b. Interfere with the utilization of oxygen at the cellular level
 - c. Cyanide

C. Transportation Considerations

1. Ideal to have a team of paramedics who were not involved with decontamination standing by to transport patients
2. Patients received after field decontamination should not be assumed to be completely decontaminated.
 - a. Precautions include wearing PPE and sufficient decontamination to operate the ambulance.
3. Before receiving and transporting a patient exposed to hazardous material
 - a. Reduce the amount of supplies and equipment that the patient will come in contact with.
 - b. Use as much disposable equipment as possible.
 - c. Plan to isolate the patient by wrapping him or her in a plastic barrier to reduce secondary contamination (double-wrap procedure preferable).
4. Often hospitals will have a separate or dedicated treatment and decontamination room for these situations.

X. Medical Monitoring and Rehabilitation

Time: 10 minutes

Slides: 52–55

Lecture

A. Overview

1. Rehabilitation
 - a. Process through which hazardous materials entry teams are rested, rehydrated, and evaluated before being sent back into the hot zone
 - b. PPE the team wears often causes heat stress.
 - c. Toxins the team is working with can cause serious health effects.
2. Medical monitoring should include
 - a. Documentation of the incident factors (hazardous materials involved, their toxic effects, what PPE was worn, its resistance to permeability, and what type of decontamination)
 - b. Plan for treatment, transport, and potential availability of antidotes in case a team member needs assistance

3. Before being allowed to re-enter the hot zone, the team member should be evaluated by the paramedic in the rehab sector for
 - a. Hydration
 - b. Vital signs
 - c. Symptoms of exposure

B. You are the Provider Summary

Slide: 56

Lecture/Discussion

1. Continue reading the case study provided on the slide:
 - a. Having basic knowledge is very important when entering a HazMat scene.
 - b. Make sure you have the *Emergency Response Guidebook* with you so you can provide the appropriate patient care.
 - c. Never expose yourself to hazardous materials without knowledge of what they are. You need to make sure you are wearing the proper personal protective equipment. If necessary, allow the HazMat team to bring the patient to you after the patient has been decontaminated. Do not rush in and add another patient to the mix—you!

C. Summary

1. Laws and regulations
2. Identification of hazardous materials
3. Scene management
4. Decontamination and treatment
5. Medical monitoring and rehabilitation

Post-Lecture

I. Prep Kit Activities

Time: 55 minutes

Note: This section contains various student-centered end-of-chapter activities designed as enhancement to instructor's preparation. As time permits, these activities may be presented in class. They are also designed to be used as outside homework/activities.

A. Assessment in Action

Time: 20 minutes

Individual/Small Group Activity/Discussion

Purpose

This activity is designed to assist students in gaining a further understanding of the chapter content. This activity allows students an opportunity to analyze an emergency care scenario, develop responses, and integrate what they have learned.

Instructor Directions

1. Direct students to read the "Assessment in Action" scenario located in the Prep Kit at the end of Chapter 50.
2. Direct students to read and individually answer the quiz questions at the end of the scenario. Facilitate a class review and dialogue of the answers, allowing students to correct responses as may be needed. Use the quiz question answers noted below to assist in building this review.
3. You may also wish to assign these as individual activities and ask students to turn in their comments on a separate piece of paper.

Answers to Multiple-Choice Questions

You are dispatched to an overturned tractor trailer on a busy highway. When you arrive, you notice the truck is leaking something. You're not sure what it is. You immediately call for additional resources.

1. On arrival, you see a placard with white and red stripes. This truck is most likely carrying:
 - A. oxidizers.
 - B. flammable liquids.
 - C. flammable solids.
 - D. explosives.

Answer: C. The DOT placard system identifies flammable solids with a white and red striped placard.

2. All EMS personnel should be trained to:
 - A. Technician level.
 - B. Operations level.
 - C. Hazard level.
 - D. Awareness level.

Answer: D. All EMS personnel should be trained to the Awareness level because they may be the first personnel to discover a hazardous materials release.

3. All of the following are responsibilities of hazardous material awareness-trained personnel, EXCEPT:
 - A. having knowledge of hazardous materials and risks involved in case of an accident.
 - B. recognizing the need for additional resources.
 - C. understanding the potential outcomes of a hazardous materials incident.
 - D. entering the hot zone and mitigating the incident.

Answer: D. First responders are not trained in the mitigation of a hazardous materials incident. Hazardous materials technicians and specialists accomplish mitigation.

4. The standard rule of thumb for hazardous materials scene assessment is:

- A. if the entire scene cannot be covered by your thumb held out at arm's length, then you are too close.
- B. an approach to possible hazardous materials incident should include stopping a certain distance away.
- C. the identification of the hazardous material on scene.
- D. preparing the paramedic for the possible health risks.

Answer: A. The standard rule of thumb for hazardous materials scene assessment says that if the entire scene cannot be covered by your thumb held out at arm's length, then you are too close. Paramedics should attempt to get information remotely about what happened, who is involved, and how many patients there are.

5. The guidebook that paramedics should have in their vehicle to help identify a hazardous material is the:
- A. DOT Emergency Response Guidebook.
 - B. Hazardous Material Textbook.
 - C. Material safety data sheets.
 - D. DOT truck placard chart.

Answer: A. The DOT *Emergency Response Guidebook* will allow you to identify the type of hazardous materials involved in the incident, as well as help obtain information on safety distances and evacuation.

6. You should stay _____ from any hazardous material scene.
- A. Uphill and upwind
 - B. Downhill and downwind
 - C. Uphill and downwind
 - D. Upwind and downhill

Answer: A. If you are able to read placards with the naked eye, you may be too close and should consider moving farther away. In general, you should stay uphill and upwind from any hazardous materials scene. To help determine wind direction, a 2-foot-long piece of narrow roller bandage can be tied to the top of your antenna. Check the wind periodically.

7. While on scene, to get additional information regarding a specific chemical product, you may call:
- A. CHEMTREC.
 - B. FEMA.
 - C. CDC.
 - D. poison control.

Answer: A. CHEMTREC is a 24-hour hotline designed to provide trained experts to assist in hazardous materials incident mitigation.

8. The measure of health risk that a substance poses to someone who comes into contact with it is called the:

- A. health hazard.
- B. bill of lading.
- C. toxicity level.
- D. primary contamination.

Answer: C. There are five toxicity levels: 0, 1, 2, 3, 4, and 5. The higher the number, the greater the toxicity.

9. All concepts and principles of _____ and the Incident Command System (ICS) should be applied to hazardous materials incidents.
- A. National Incident Management Systems (NIMS)
 - B. Federal Emergency Management Agency
 - C. Secret Service
 - D. Department of Transportation

Answer: A. This will help ensure an efficient, safe response. Hazardous materials incident management may at times seem laborious, slow, or cumbersome, but the potentially extreme hazards mandate a cautious approach.

10. The type of personal protective equipment that provides the highest level of protection at a hazardous materials incident is known as:
- A. Level A.
 - B. Level B.
 - C. Level C.
 - D. Level D.

Answer: A. Level A provides the greatest protection from exposure to hazardous substances. Also known as fully encapsulating, these suits have the look of a space suit because they fully cover and protect the SCBA.

Challenging Questions

You are dispatched to a warehouse for three patients who are complaining of nausea, vomiting, diarrhea, and sweating. When you arrive on scene, you find the patients located outside on a bench. During your assessment, you note that the patients are also hypotensive and have constricted pupils. You begin to ask questions and you find out that this "warehouse" manufactures pesticides.

11. What should you immediately begin to suspect?

Rationale: This is a clear case of organophosphate poisoning. Surface exposure to organophosphate chemicals can be extremely toxic to both victim and responder. Organophosphate poisoning stimulates the parasympathetic nervous system, causing signs and symptoms that include vomiting, diarrhea, sweating, constricted pupils, nausea, profuse sweating, and excessive salivation.

12. What treatment should you provide for these patients?

Rationale: In addition to removing the patients' clothing and decontaminating with copious amounts of water, treatment of symptomatic organophosphate poisoning includes oxygen administration, IV access, cardiac monitoring, and administration of atropine IV in 2 to 5 mg increments every 10 to 15 minutes as needed. Transport the patient to the hospital immediately.

B. Points to Ponder

Time: 20 minutes

Individual/Small Group Activity/Discussion

This activity addresses the affective objectives of the chapter, allowing you to help students probe the more difficult situations that they face. Use this as an opportunity to allow them to express differences of opinion and approach, while directing them to be thorough and decisive in their answers. Encourage challenges.

Purpose

To allow students an opportunity to apply critical thinking analysis to a given case study.

Instructor Directions

1. Direct students to read the "Points to Ponder" scenario found in the Prep Kit at the end of Chapter 50.
2. You may wish to assign students to a partner or a group and direct them to review the discussion question at the end of the scenario and prepare a response. Facilitate a class dialogue centered on the discussion point.
3. You may also ask students to complete this activity on their own and hand in their comments on a separate piece of paper.
4. Personally review the scenario and discussion question based on your experience and knowledge as an emergency care professional. Develop your own key points for guiding this discussion.

Scenario

You are dispatched to an explosion at an apartment complex. While you are en route, you see red balls of flames high in the air in the distance. When you arrive, several fire engines are already on scene. They are keeping you at a staging area until they figure out what happened and if any hazardous materials were involved.

What can you do while waiting for clearance?

Once you enter the scene, what precautions should you take?

Issues

Understanding What to Do at a Hazardous Materials Incident.

Discussion

Dealing with hazardous materials incidents requires specialized training and equipment. The paramedic who is reckless to reach patients without making a careful evaluation of the situation is likely to become a victim. As a paramedic, you must learn how to identify potential hazardous materials scenes and what to do if you discover that you're the first responder. You should have a basic understanding of how hazardous materials scenes should be organized and how you fit into the scheme. You need to understand the importance of PPE used at these scenes.

In this scenario, the fire department is already on location advising you to stand by. You eventually find out that an underground gas line exploded and set off a series of explosions that destroyed 21 townhouses.

II. Lesson Review

Time: 10 minutes

Discussion

Note: Facilitate the review of this lesson's major topics using the review questions as direct questions or overhead transparencies. Answers are found throughout this lesson plan. Each question includes a reference to the slide where the information is covered.

1. What laws and regulations require EMS to receive and maintain a working knowledge of hazardous materials awareness? (Lecture II-A)
2. What critical safety information should be included in an MSDS sheet? (Lecture V-A)
3. Name the valuable resources available for the identification of hazardous materials. (Lecture V)
4. What is a safe distance and position for an EMS provider in a hazardous materials incident? (Lecture VI-A)
5. What factors determine the ranking of hazardous materials according to NFPA 704, hazardous materials classification? (Lecture V-D)
6. EMS providers trained at the Awareness level can enter which zone in a hazardous materials incident? (Lecture VI-B)
7. How does a parenteral exposure to a hazardous material occur? (Lecture VII-B)
8. Name the four decontamination methods. (Lecture IX-A)
9. The mnemonic SLUDGE is used to identify the severe signs and symptoms associated with which type of hazardous materials exposure? (Lecture IX-B)
10. EMS providers may be required to medically monitor HazMat team members prior to re-entering a hot zone. What three items need to be evaluated before members are allowed back to the zone? (Lecture X-A)

III. Assignments

Time: 5 minutes

Lecture

1. Review all materials from this lesson and be prepared for a lesson quiz to be administered (date to be determined by instructor).
2. Read Chapter 51: *Crime Scene Awareness* for the next class session.