CHAPTER 39

Hazardous Materials, Multiple-Casualty Incidents and Incident Management

HANDOUT 39-2: Evaluating Content Mastery  Student’s Name

EVALUATION

CHAPTER 39 QUIZ

Write the letter of the best answer in the space provided.

_____ 1. According to the Department of Transportation, a hazardous material is a substance that:
   A. can explode.
   B. can cause death.
   C. poses an unreasonable risk to health, safety, and property when transported.
   D. does not meet OSHA guidelines for workplace and product safety.

_____ 2. Which minimum level of training should all EMS responders have according to the federal government?
   A. Hazardous Materials Specialist
   B. First Responder Operations
   C. Hazardous Materials Technician
   D. First Responder Awareness

_____ 3. The level of training required of rescuers who actually plug, patch, or stop the release of a hazardous material is:
   A. Hazardous Materials Specialist
   B. First Responder Operations
   C. Hazardous Materials Technician
   D. First Responder Awareness
4. A safe zone should NOT be ______ a chemical spill.
   A. on the same level with       C. downwind of
   B. uphill from                 D. at a distance from

5. The medical treatment area that EMS is responsible for setting up to receive decontaminated patients is done in the:
   A. hot zone.                   C. triage zone.
   B. cold zone.                 D. warm zone.

6. The first and primary concern of the EMT at a hazardous materials incident is for:
   A. his/her own personal safety. C. the safety of the public.
   B. the safety of crew.         D. the patient’s medical needs.

7. Secondary contamination occurs when a:
   A. “clean” person enters the hot zone.
   B. patient has been exposed to two or more chemicals.
   C. contaminated person contacts a “clean” person.
   D. change in conditions—for example, a wind shift—enlarges the hot zone.

8. The U.S. Department of Transportation requires that vehicles carrying hazardous materials display:
   A. labels or placards.          C. red and yellow flashers.
   B. red warning flags.          D. a CHEMTREC number.

9. A common placarding system used to mark fixed structures that contain hazardous materials is the:
   A. NFPA 704 System.            C. CHEMTREC System.
   B. DOT UN System.              D. MSDS System.
10. The standard reference for hazmat incidents that should be aboard all EMS vehicles is the:

B. NFPA Standard #473.
C. *Material Safety Data Sheet.*
D. *Emergency Response Guidebook.*

11. The basic responsibilities of EMTs at a hazardous materials incident are to take care of the injured and:

A. monitor and rehabilitate hazmat team members.
B. decontaminate those leaving the hot zone.
C. provide support to hazmat team members as requested in the hot zone.
D. all of the above.

12. The most common MCI (or MCS) is a:

A. fuel leak.
B. carbon monoxide incident.
C. car crash with three or more patients.
D. house fire.

13. The manageable span of control over people involved in an MCI is:

A. 3.
B. 6.
C. 10.
D. 15.

14. Once Incident Command is established at an MCI, the first two phases of action that must be taken are organization/delegation and:

A. treatment/transport.
B. scene size-up/triage.
B. rescue/treatment.  
D. scene size-up/rescue.

15. During an MCI, as much communication as possible between Command and sector officers and sector officers and subordinates should be:
A. face-to-face.  
B. through portable radios.  
C. through the EMD.  
D. via cell phones.

16. A quick assessment and assigning of priorities for treatment or transport is:
A. staging.  
B. triage.  
C. redlining.  
D. CISD.

17. At an MCI, patients with major or multiple bone or joint injuries should be classified as:
A. Priority 1.  
B. Priority 2.  
C. Priority 3.  
D. Priority 4 (or 0).

18. At an MCI, pulseless patients with exposed brain matter should be classified as:
A. Priority 1.  
B. Priority 2.  
C. Priority 3.  
D. Priority 4 (or 0).

19. At an MCI, the area from which all vehicles should be called to wait for a patient transport assignment is the:
A. transportation sector.  
B. supply sector.  
C. extrication sector.  
D. staging sector.

20. During an MCI, radio communications from the scene of the incident to the receiving hospitals should be handled by the:
A. Incident Commander.  
B. individual EMTs.  
C. transportation officer.  
D. EMD.
HANDOUT 39-3: Evaluating Content Mastery  Student’s Name

REINFORCEMENT

IN THE FIELD

Read the following real-life situation. Then answer the following questions. You may wish to consult the material safety data sheet on the next page.

Returning to the station after several back-to-back calls, you and your partner, Tim, start to clean up. You begin on the inside of the ambulance, while Tim agrees to wash down the backboards.

The backboards are particularly dirty after a couple of tough extrication calls. There is dried blood as well as grease and antifreeze on the boards.

Tim takes the backboards into the dirty utility room off the main bays. It has a deep sink, as well as brushes and cleaners to clean equipment. He reviews the cleaning procedures for washing down a dirty backboard. He then dons a pair of heavy gloves, a plastic gown, and a pair of goggles.

Tim is having a tough time cleaning off the grease from the board, so he decides to mix a little bleach into the ammonia and soapy water mixture he was using. Smelling the mixture, he thinks to himself, “Boy is that strong!” He then continues to scrub the boards.

Soon he realizes that his eyes are watering and burning. But he wants to get the job done, so he keeps on working. Pretty soon, he is breathing heavily, more heavily than he should be considering how much work he is doing. He feels a funny tightness in his chest and gets a little apprehensive.

Having completed washing down the inside of the rig, you go see if you can help Tim out. One look tells you that something is wrong with Tim. Tim tells you he is having trouble breathing.

You call out for the supervisor and go to work helping your partner.
1. What caused Tim’s problem?

2. What health hazards may be present on the scene?

3. What first aid would you provide in this case?

4. Do you need to wear any special protection?

5. Whom could you call for more instructions on first aid?
CHAPTER 39 REVIEW

Write the word or words that best complete each sentence in the space provided.

1. Any substance in a form that poses an unreasonable risk to health, safety, and property when transported in commerce is considered a(n) ____________________________ ____________________________.

2. Without proper training, the EMT on the scene of a dangerous chemical spill may have to stay a(n) ____________________________ ____________________________ ____________________________.

3. According to regulations developed by the federal agencies ____________________________ and ____________________________, EMTs must be trained about hazardous materials.

4. All emergency responders must be minimally trained to the ____________________________ level.

5. All victims and rescuers leaving the site of a chemical spill should be considered ____________________________.

6. When there are multiple patients with medical complaints on the same scene, the EMT should think ____________________________.

7. When arriving first on the scene of a chemical spill, the EMT should never assume the scene is ____________________________.

8. The EMT who arrives first at a hazmat scene needs to decide where to establish the ____________________________ zone and the ____________________________ zone.

9. Equipment and other responders are typically staged inside the
10. The 24-hour emergency chemical information and assistance center reachable at 800-424-9300 is ____________________________.

11. The NFPA 704 Hazard Identification System is seen on ____________________________ ____________________________.

12. An event that by its nature challenges or hampers an EMS system’s ability to respond to it is a(n) ____________________________ ____________________________ ____________________________.

13. The organizational structure that provides a framework for managing large-scale MCIs is the ____________________________ ____________________________ ____________________________.

14. There are two methods of Command at a large-scale MCI, ____________________________ and ____________________________.

15. At a large-scale MCI, Command is initially assumed by the ____________________________ ____________________________ member of the ____________________________ ____________________________ on the scene.

16. Command must take control of the scene and the personnel at it to prevent wasteful, uncoordinated, and undirected ____________________________.

17. Once Incident Command is established, the next task is to ____________________________ the patients.

18. When faced with more than one patient, the goal is to afford the ____________________________ ____________________________ of people the ____________________________ ____________________________ of survival.
19. To help keep track of patient priorities, affix a(n) __________________________
____________________________ to each patient.

20. Under the Incident Command System, it is vital that no ambulance transport a patient with-
out the approval of the __________________________
____________________________.

HANDOUT 39-5: Evaluating Content Mastery  Student’s Name

ANALYZING A HAZMAT INCIDENT

Review the following situation.

It’s an early Tuesday morning when you are dispatched to a reported truck accident in the Guilderland Industrial Park near the sewage treatment plant. Upon arrival you can clearly see smoke and vapors coming from an overturned tank truck.

You stay back and view the scene with your binoculars from the cab of the ambulance. On the side of the overturned truck, you can read the UN identification placard number 1017.

Review your hazardous materials information (accompanying pages) and your map and answer the following questions. You should also know that the winds are from the east at 5 to 10 mph.

The top of the map is north and the scale is printed on the map.

1. What material does the tank truck contain?

2. This is a potentially large spill of material that is a highlighted or hazardous substance. How large an isolation zone should be set up at first? How should that zone be changed later?

3. What basic public safety guidelines apply in this situation?

4. Will evacuation be necessary? What are areas of major concern in this incident?

5. Now, take the topographic map on page 777 of this Handout, and “pencil in” the following:
   • Danger zone/safe zone perimeter.
   • Possible Command post locations.
   • Possible decontamination corridor locations.
   • Triage point at end of decontamination corridor.
   • Staging area for incoming ambulances.
ANALYZING AN MCI

Attached you will find an example of a typical incident tactical worksheet. Given the following initial size-up information plus reports from the sector officers, answer the questions and complete as much of the sheet as you are able to.

The Crossgates apartment complex is on fire. Starting as a small kitchen fire, the fire has spread to five other units and displaced at least 30 people. At least five volunteer fire companies are on the scene, each with at least five firefighters.

Reports of victims are streaming in. As EMS command on scene, you have coordinated with fire and police command to establish a perimeter. You have also instructed the next senior EMT on the scene to establish a forward triage point near the front door of the building. His first report reveals the following:

- one patient that firefighters have started CPR on—Priority 4
- two seriously burned adult patients—Priority 1
- two elderly people, a married couple, both with extensive medical histories, both complaining of shortness of breath—Priority 1
- one person with bilateral broken ankles from jumping from the third-story—Priority 2
- three persons with burns to the hands from helping victims escape—Priority 3

Police also report about 15 residents who are out of the building and exposed to the elements.

A roll call of available receiving facilities shows the following:

St. Peter’s Hospital—five minutes away

- five critical care beds
- 10 emergency department beds
• five clinic rooms
• no morgue

Memorial Hospital—20 minutes away
• no critical care beds
• five emergency department beds
• five clinic rooms
• no morgue

AMC Hospital (regional trauma center)—10 minutes away
• five critical care beds
• 10 emergency department beds
• five clinic rooms
• five morgue openings

1. There are two major missions that EMS command must cope with at this scene. What are they?

2. What level of incident would this constitute? Why?

3. Assume you are the staging officer. How many ambulances will be needed?

4. Assume you are the transportation officer. Based on the initial triage report, which patients would you send to which hospital? Use the form on the next page to provide an answer.