CHAPTER 36

EMS Operations

HANDOUT 36-1: Evaluating Content Mastery Student's Name

EVALUATION

CHAPTER 36 QUIZ

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

_____ **1.** What is the minimum number of sizes of bag-valve mask units that should be on an ambulance?

A. One **C.** Three

B. Two **D.** Four

_____ **2.** Oxygen regulators should be capable of providing how many liters per minute at a minimum?

A. 5 **C.** 15

B. 10 **D.** 20

_____ **3.** Which reference should be available on every ambulance?

A. *Hazardous Material Guide*

B. *International EMS Response Book*

C. *National BLS Treatment Protocols*

D. *Nursing Drug Handbook*

_____ **4.** What color should biohazard bags be?

A. Orange **C.** Yellow

B. White **D.** Red

_____ **5.**A lights-and-siren response to an emergency call is referred to as:

A. Priority 1. **C.** Priority 3.

B. Priority 2. **D.** GO Code.

_____ **6.**Most states allow an emergency vehicle operator to do all of the following EXCEPT:

A.pass a school bus whose lights are flashing.

B.pass other vehicles in a no-passing zone.

C. proceed past red lights.

D. exceed the speed limits.

_____ **7.**To alert a vehicle immediately in front of the ambulance to clear the way, the best thing a driver can usually do is to:

A. turn on the siren. **C.** use the horn.

B. use the public address system. **D.** use the flashers.

_____ **8.**Which lights should not be used as emergency lights?

A. Strobes

B. Revolving light bars

C. Four-way flashers

D.Alternating headlights attached to secondary headlamps

_____ **9.**The safest backing up of the ambulance is performed when:

A. backup alarms are operational.

B. backup lights are lit.

C.the driver's mirrors are properly adjusted.

D. the driver has a spotter/guide.

_____ **10.** A common danger when an ambulance follows an escort vehicle is:

A. losing contact with the escort.

B.creating additional stress for the patient.

C.confusion for the emergency dispatchers.

D. following the escort too closely.

_____ **11.** The first emergency vehicle on the scene at a car wreck should park:

A. off the road.

B. behind the wreckage.

C. in front of the wreckage.

D. as close as possible to the wreckage.

_____ **12.** The four steps of transferring a patient to an ambulance include selecting the proper patient-carrying device, packaging the patient, moving the patient to the ambulance, and:

A. informing dispatch.

B. contacting the hospital.

C.loading the patient into the ambulance.

D. performing an ongoing assessment.

_____ **13.** If the medical patient suddenly goes into cardiac arrest, the driver should:

A.stop the ambulance to allow for operation of the AED.

B. speed up.

C. immediately request ALS rendezvous.

D. immediately turn on lights and siren.

_____ **14.** At the receiving facility, failure to transfer care of the patient to an MD, RN, or another EMT could result in charges of:

A. accosting. **C.** abdication.

B. assault. **D.** abandonment.

_____ **15.** An ambulance run is not over until:

A. care of the patient has been transferred.

B. the PCR is filed.

C. the vehicle is ready for the next response.

D. the vehicle has returned to base.

_____ **16.** When the ambulance is ready to return to quarters, the first step should be to:

A. inform the dispatcher. **C.** refuel the vehicle.

B. complete the log entry. **D.** check the lights and siren.

_____ **17.** When cleaning ambulance surfaces that were in contact with blood or body fluids, use:

A. a high-pressure hose. **C.** soap and water.

B. an infrared lamp. **D.** an EPA-approved germicide.

_____ **18.** Equipment that will be used invasively should be treated with:

A. a 1:100 bleach-to-water mixture. **C.** Lysol.

B. Cidex Plus. **D.** sterilization.

_____ **19.** An operational reason to request air rescue is:

A. a Glasgow Coma Scale score of less than 13.

B. prolonged extrication.

C.head injury with altered mental status.

D.penetrating injury to the body cavity.

_____ **20.** If you have to set up a helicopter landing zone, its minimum size should be:

A. 50 by 50 feet. **C.** 100 by 100 feet.

B. 75 by 75 feet. **D.** 200 by 200 feet.

HANDOUT 36-2: Reinforcing Content Mastery Student's Name

REINFORCEMENT

IN THE FIELD

Read the following real-life situation. Then answer the questions that follow.

"I am an experienced emergency vehicle operator. I took the defensive driving courses, the emergency vehicle operator's course, and everything else I could get my hands on. And my supervisor still put me through an extensive driver's training program. So I was proud to be a driver, and I took my job seriously. At least I thought I did. But here I am in court, getting ready to tell a grand jury what happened. Let me tell you first.

"It was a sunny day. Business was brisk, but not too busy. We'd had a couple of runs, and we thought we'd take a break. My partner Tony and I liked to go to the coffee shop on the other end of town. It was a little out of the way, but we liked the company better.

"Wouldn't you know it! As soon as we sat down, the tones go out. 'Ambulance 60: respond Priority 1 to person down, unconscious, possible cardiac arrest. Citizen CPR in progress. Address: Heritage Village Apartments, Unit 222. Time out is 1300 hours.'

"We grabbed our coffees and hauled out fast. Traffic was heavy, lunchtime and all, and I had to make time, being on the other side of the district and all. So I didn't 'spare the horses,' as they say.

"Then up ahead I saw a cop car. Cops in our town first respond to medical emergencies when they can. To tell the truth, they've pulled us out of jams more than once, so I'm usually glad to see them. Anyway, I got right in behind him, following him carefully. I'd changed my siren to yelp so that other drivers could hear the difference as we came up to the intersection.

"I couldn't have been doing more than 30 when we went through the intersection. She must have

run the light or something. I had the red, but it should have changed by the time I was in the intersection. And I thought it was OK because the cop got through.

"Next thing, there's a crash, and Tony's on top of me and the rig's rolling on its side. My arm was busted and a few of Tony's ribs. We were lucky, though, luckier than the lady who hit us. The ER did what it could, but she was too far gone.

"Anyway, a couple of days later, I'm back at the station. That cop I followed comes in. He arrests me for reckless endangerment. Now I'm waiting to talk to the grand jury."

1. List the factors that contributed to this accident.
2. Did the driver make a mistake in following the police car into the intersection? Why or why not?
3. Did the ambulance driver show "due regard for the safety of others"?
4. If you were on the grand jury, would you find sufficient cause to indict the driver on the charges of reckless endangerment?

HANDOUT 36-3: Reinforcing Content Mastery Student's Name

CHAPTER 36 REVIEW

Write the word or words that best complete the following sentences in the space provided.

1. The U.S. Department of _____ has issued specifications for _____ types of ambulances.

2. The American College of Surgeons has created a list of recommended supplies for _____.

3. The person who has been specially trained to handle 911 calls is the _____ _____ _____.

4. All emergency vehicle operators must demonstrate _____ _____ for the safety of the public when driving their vehicles.

5. The law does not grant _____ if an ambulance driver operates the vehicle in a reckless manner.

6. An ambulance approaching a stopped school bus should wait until the bus's flashing red lights are turned _____ before proceeding.

7. The best placement of an ambulance siren is in the vehicle's _____.

8. During a call, ambulance headlights should always be _____.

9. Most accidents involving ambulances occur on _____ roads in _____ weather during _____ hours and in a(n) _____.

10. _____ refers to the sequence of operations required to ready the patient to be moved.

11. There should be a minimum of _____ straps on a stretcher.

12. The unconscious patient who is not suspected of having a spinal injury should be shifted into the _____ position once on board the ambulance.

13. If a child is to accompany a parent to the hospital, the EMT should make sure that the _____ _____ _____ is used.

14. The minimum staffing for the patient compartment of an ambulance is considered to be _____ _____.

15. The decision to operate the ambulance with or without lights belongs to the _____.

16. Conditions that affect the accuracy of GPS navigation systems include _____ _____ and the possible use of _____ _____.

17. At the receiving facility the EMT must ensure _____ _____ _____ of the patient to someone of equal or higher medical training.

18. If a patient's personal effects have been transported, the EMT is well advised to get a _____ from a nurse or security guard at the receiving facility.

19. On the return trip to base after a call, the driver and the EMT should wear _____ _____.

20. When cleaning the ambulance after a call, the EMT should wear _____.

HANDOUT 36-4: Reinforcing Content Mastery Student's Name

EMS OPERATIONS LISTING

Complete the following lists.

1. List the four steps involved in transferring a patient to an ambulance.

_____

_____

_____

_____

2. List at least six activities commonly done when preparing a patient for transport once he is in the ambulance.

_____

_____

_____

_____

_____

_____

3. List four activities commonly done while caring for a patient en route to a receiving facility.

_____

_____

_____

_____

4. List five steps that can be taken to prepare the ambulance for return to service while at

the hospital.

HANDOUT 36-5: Reinforcing Content Mastery Student's Name

EMS OPERATIONS TRUE OR FALSE

Indicate if the following statements are true or false by writing T or F in the space provided.

_____ **1.** The Type IV ambulance is the one most widely used today.

_____ **2.** Every ambulance should have, at a minimum, one fixed and two portable oxygen systems.

_____ **3.** The ambulance engine must be running if coolant levels are to be properly checked.

_____ **4.** The Emergency Medical Dispatcher can interrogate callers and assign priorities to calls.

_____ **5.** Most states allow ambulances to be parked anywhere if they do not damage personal property or endanger lives.

_____ **6.** If an ambulance operator operates without due regard for the safety of others, she is still protected by Good Samaritan laws.

_____ **7.** Use of lights and sirens should be saved for life- or limb-threatening emergencies.

_____ **8.** Many EMS systems prefer not to use police escorts with their ambulances.

_____ **9.** At a car wreck the ambulance should be parked as close to the wreckage as possible to speed the loading of patients.

_____ **10.** If a patient is likely to develop cardiac arrest during transport, place a short spine board under the mattress before beginning the trip.

_____ **11.** If the patient vomits en route, clean up the vomitus and dispose of it as soon as you arrive at the receiving facility.

_____ **12.** As a rule, the PCR should be completed upon return to quarters.

_____ **13.** A mixture of 1:100 bleach-to-water can clean and kill germs on equipment surfaces.

_____ **14.** Uniforms soiled by blood or body fluids should not be taken home for cleaning.

_____ **15.** As a rule, request air transport for all cardiac arrest patients.

Chapter 36 Answer Key

HANDOUT 36-1: Chapter 36 Quiz

1. D

2. C

3. A

4. D

5. A

6. A

7. C

8. C

9. D

10. D

11. C

12. C

13. A

14. D

15. C

16. A

17. D

18. D

19. B

20. C

HANDOUT 36-2: In the Field

1.Contributing factors: distance between the ambulance and patrol car; speed entering the intersection; failure to yield in the intersection

2.Yes, following the patrol car too closely raised the risk that it wouldn't be identified by other drivers.

3.No, his actions directly contributed to a fatality.

4.Student responses may vary, but at least the grounds for indicting are here, whether or not they believe he was actually guilty.

HANDOUT 36-3: Chapter 36 Review

1.Transportation; three

2.ambulances

3.Emergency Medical Dispatcher

4.due regard

5.immunity

6. off

7. grill

8. on

9.dry; clear; daylight; intersection

10. Packaging

11. three

12.recovery

13.child car seat

14.one EMT

15. EMT

16.road construction; outdated maps

17.transfer of care

18.receipt

19.seat belts

20.gloves

HANDOUT 36-4: Ambulance Operations Listing

1.Selecting the proper patient-carrying device; Packaging the patient; Moving the patient to the ambulance; Loading the patient onto the ambulance

2.*(Any six of these activities.)* Perform ongoing assessment. Secure the stretcher. Position and secure the patient. Prepare for respiratory or cardiac complications. Loosen constricting clothing. Check bandages/splints. Load personal effects. Reassure the patient.

3.*(Any four of these activities.)* Notify EMD that you are leaving the scene. Continue emergency care. Compile additional patient information. Perform ongoing assessment, and monitor vital signs. Notify receiving facility. Recheck bandages and splints. Collect vomitus. Talk to patient. Advise driver of changing conditions. Be prepared to intervene if cardiac arrest develops.

4.Clean patient compartment. Prepare respiratory equipment for service. Replace expendable items. Exchange equipment. Make up the ambulance cot.

HANDOUT 36-5: Ambulance Operations True or False

1. F

2. F

3. F

4. T

5. T

6. F

7. T

8. T

9. F

10. T

11. F

12. F

13. T

14. T

15. F

CHAPTER 37

Hazardous Materials, Multiple-Casualty Incidents, and Incident Management

HANDOUT 37-1: Evaluating Content Mastery Student's Name

EVALUATION

CHAPTER 37 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:

A. *OSHA Hazardous Water Operations and Emergency Response Standards.*

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.

C. 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. **C.** through the EMD.

B. through portable radios. **D.** via cell phones.

_____ **16.** A quick assessment and assigning of priorities for treatment or transport is:

A. staging. **C.** redlining.

B. triage. **D.** CISD.

_____ **17.** At an MCI, patients with major or multiple bone or joint injuries should be classified as:

A. Priority 1. **C.** Priority 3.

B. Priority 2. **D.** Priority 4 (or 0).

_____ **18.** At an MCI, pulseless patients with exposed brain matter should be classified as:

A. Priority 1. **C.** Priority 3.

B. Priority 2. **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. **C.** extrication sector.

B. supply 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. **C.** transportation officer.

B. individual EMTs. **D.** EMD.

HANDOUT 37-2: 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.

Sparkly Clean Bleach Company
4521 97th Avenue
Toledo, OH

Material Safety Data Sheet

I. Product: SPARKLY CLEAN BLEACH®

Description: CLEAR, FAINT YELLOW LIQUID WITH CHARACTERISTIC BLEACH ODOR

Other Designations	Distributor	Emergency Number
EPA Reg. No. 2290A-YH74	Sparkly Clean Sales 4521 97th Avenue Toledo, OK	Poison Control: 800-555-1222

II. Health Hazard Data

Moderate eye irritant. Mild to moderate skin irritant. Occasional clinical reports suggest a low potential for skin sensitization upon exaggerated exposure to sodium hypochlorite if skin damage (e.g. irritation) occurs during exposure. Routine clinical tests conducted on intact skin with this product found no sensitization in the test subjects. Exposure to vapor or mist may irritate eyes, nose, throat, lungs. Harmful if swallowed. May cause nausea and vomiting if swallowed. The following medical conditions may be aggravated by exposure to high concentrations of vapor or mist: heart conditions or chronic respiratory problems such as asthma, emphysema, chronic bronchitis or obstructive lung disease. Under normal consumer-use conditions, the likelihood of any adverse health effects is low.

FIRST AID:
EYE CONTACT: Hold eye open and rinse slowly and gently with water for 15–20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. If irritation persists, call a doctor.

SKIN CONTACT: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15–20 minutes. If irritation persists, call a doctor.

INGESTION: Call a poison control center or doctor for further treatment advice. Have person sip a glassful of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

INHALATION: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. If breathing is affected, call a doctor.

III. Hazardous Ingredients

Ingredient	Concentration	Worker Exposure Limit
Sodium hypochlorite CAS # 7681-52-9	1-5%	Not established
Sodium hydroxide CAS # 1310-73-2	0.1-1%	2 mg/m^3 - TLV-C[a] 2 mg/m^3 - PEL-TWA[b]

[a]TLV-C = ACGIH Threshold Limit Value - Ceiling

[b]PEL-TWA = OSHA Permissible Exposure Limit - Time Weighted Average/Short Term Exposure Limit

None of the ingredients in this product are on the IARC, OSHA or NTP carcinogen lists.

IV Special Protection and Precautions

Hygienic Practices: Wash hands after direct contact. Do not wear product-contaminated clothing for prolonged periods.

Engineering Controls: Use local exhaust to minimize exposure to product vapor or mist.

Personal Protective Equipment: Wear safety glasses. Wear rubber or neoprene gloves if there is the potential for repeated or prolonged skin contact. In situations where exposure limits may be exceeded, a NIOSH-approved respirator is advised.

V Transportation and Regulatory Data

DOT/IMDG/IATA: Not restricted.

EPA - SARA TITLE III/CERCLA: This product is regulated under Sections 311/312 and contains no chemicals reportable under Section 313. This product does contain chemicals (sodium hydroxide and sodium hypochlorite) that are regulated under Section 304/CERCLA.

TSCA/DSL STATUS: All components of this product are on the U.S. TSCA Inventory and Canadian DSL.

VI Spill Procedures/Waste Disposal

Spill Procedures: Absorb and containerize. Wash down residual to sanitary sewer. Contact the sanitary treatment facility in advance to assure ability to process washed-down material. For spills of multiple products, responders should evaluate the MSDS's of the products for incompatibility with sodium hypochlorite. Breathing protection should be worn in enclosed, and/or poorly ventilated areas until hazard assessment is complete.

Waste Disposal: Dispose of in accordance with all applicable federal, state, and local regulations.

VII Reactivity Data

Stable under normal use and storage conditions. Reacts with other household chemicals such as toilet bowl cleaners, rust removers, acids or ammonia-containing products to produce hazardous gases, such as chlorine and other chlorinated compounds. Prolonged contact with metal or old porcelain may cause pitting or discoloration.

VIII Fire and Explosion Data

Not flammable or explosive.

IX Physical Data

pH: ..... 12.4 - 12.8

Solubility in water: ..... Completely soluble

1. What most likely 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?

HANDOUT 37-3: Evaluating Content Mastery Student's Name

CHAPTER 37 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, unco-ordinated, 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 without the approval of the _____

_____.

Chapter 37 Answer Key

HANDOUT 37-1: Chapter 37 Quiz

1. C

2. D

3. C

4. C

5. B

6. A

7. C

8. A

9. A

10. D

11. A

12. C

13. B

14. C

15. A

16. B

17. B

18. D

19. D

20. C

HANDOUT 37-2: In the Field

1. Tim probably created a chlorine gas or other chlorinated species by mixing the bleach and ammonia.
2. The resulting product is severely irritating to the skin and eyes on contact. If inhaled, it may induce asthma-like symptoms including bronchospasm.
3. Move him to fresh air immediately. Follow local or regional protocols and consider contacting medical control or poison control accordingly.
4. At a minimum, wear safety glasses and gloves.
5. Either your local poison control center or a national poison control center.

HANDOUT 37-3: Chapter 37 Review

1. hazardous materials
2. safe distance away
3. OSHA, EPA
4. awareness
5. contaminated
6. hazmat (chemicals)
7. safe
8. hot/danger; cold/safe
9. cold zone
10. CHEMTREC
11. fixed facilities
12. multiple-casualty incident

13. Incident Command System (or Incident Management System)

14. singular; unified

15. most senior; first service

16. freelancing

17. triage

18. greatest number; greatest chance

19. triage tag

20. transportation officer

CHAPTER 38

Highway Safety and Vehicle Extrication

HANDOUT 38-1: Evaluating Content Mastery Student's Name

CHAPTER 38 QUIZ

EVALUATION

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

_____ **1.**The recommended method of stabilizing a vehicle on its wheels is to use:

A. three-step chocks. **C.** one-step chock.

B. two-step chocks. **D.** bumper jacks.

_____ **2.**When placing cribbing under a vehicle, remember to:

A.kneel down while keeping one hand on the vehicle.

B.kneel down while keeping one hand on the ground.

C.squat down and remain on the balls of your feet.

D.lie down and slip the cribbing in place.

_____ **3.**The two types of vehicle glass include:

A.laminated (contains a plastic sheet) and tempered (breaks into small fragments).

B.laminated (breaks into rounded pieces) and tempered (contains a plastic sheet).

C.laminated (contains a plastic sheet) and tempered (breaks into rounded pieces).

D.laminated (breaks into sharp fragments) and tempered (contains a plastic sheet).

_____ **4.**If you "try before you pry," you can often achieve:

A. limited access. **C.** high-angle access.

B. simple access. **D.** complex access.

_____ **5.**A flathead ax is usually required to:

A. remove a crushed steering wheel. **C.** pry open a distorted car door.

B. break through a windshield. **D.** remove seat backs.

_____ **6.**The roof support that is between the front door and the back door of a four-door sedan is called the:

A. safety post. **C.** B-post.

B. A-post. **D.** C-post.

_____ **7.**Which of the following is NOT an advantage to disposing of a car roof during extrication?

A. It gives access to the entire interior.

B.It avoids accidental airbag deployment.

C.It provides a large exit for rapid extrication.

D.It provides fresh air for patient and rescuers.

_____ **8.**The third and last step of the three-part action plan for disentangling a patient trapped in a vehicle is to:

A. displace the doors. **C.** disentangle the patient.

B. dispose of the roof. **D.** displace the front end.

_____ **9.**If a car's battery must be disconnected, then:

A. disconnect the positive cable first.

B. disconnect the ground cable first.

C.disconnect both cables simultaneously.

D. simply turn off the ignition.

_____ **10.** To determine if a vehicle that has been involved in a collision is stable, the EMT should:

A. stand to the side and rock the vehicle.

B. push down on the rear bumper.

C. "eyeball" the situation.

D. assume the vehicle is unstable and crib.

_____ **11.** Which of these specialized rescue teams would likely require heavy hydraulic cutting tools?

A. Ice rescue **C.** Dive rescue

B. High-angle rescue **D.** Vehicle rescue

_____ **12.** On arrival at the scene of a collision, the EMT should first:

A. stabilize the vehicle. **C.** size up the situation.

B. gain access to the patient. **D.** recognize and manage hazards.

_____ **13.** Which article of protective equipment provides an acceptable level of head protection?

A. Bump cap **C.** Uniform cap

B. Firefighter's helmet **D.** Bicyclist's helmet

_____ **14.** The best eye protection at a vehicle collision is provided by:

A. sunglasses.

B. safety glasses.

C. hinged plastic helmet shields.

D. safety goggles with soft vinyl frames and indirect venting.

_____ **15.** The safest shoes to wear on the scene of a vehicle collision are:

A. rubber firefighter's boots. **C.** deck shoes.

B. high-top cross-training shoes. **D.** high-top, steel-toe work shoes.

_____ **16.** With a vehicle that has been in a collision and a patient who now must be extricated, the EMT should consider the vehicle:

A. stable, if it can be visibly verified.

B. stable, if all wheels are touching the ground.

C. stable, if most of the wheels are touching the ground.

D. unstable.

_____ **17.** The first traffic warning device that an EMT usually places at the scene of a vehicle collision is:

A. a reflective road sign. **C.** a flare.

B. the flag person. **D.** the ambulance's flashing lights.

_____ **18.** A "ground gradient" at the scene of a wreck poses the risk of:

A. poisoning by absorption. **C.** asphyxiation.

B. electrocution. **D.** drowning.

_____ **19.** Which burning material CANNOT be extinguished with an A:B:C fire extinguisher?

A. A car's upholstery **C.** Magnesium

B. Fuel **D.** Electrical components

_____ **20.** When encountering an empty vehicle with the engine on fire and the hood tightly closed, the EMT should:

A. spray a fire extinguisher up from underneath the vehicle.

B.open the hood fully, stand close to the A-post, and spray across the engine.

C.open the hood up to the safety latch, insert the extinguisher nozzle in any opening, and spray.

D.leave the hood closed tight, and let the fire burn.

HANDOUT 38-2: Reinforcing Content Mastery Student's Name

REINFORCEMENT

IN THE FIELD

Read the following real-life situation. Then answer the questions that follow.

Dispatch: *Medic One, Ambulance 5680, respond Priority 1 to the car off the road. Time is now 0230 hours.*

"We roll out of our bunks and grab our boots. In minutes, we are on the road, running lights and sirens into the dark night.

"Trying to shake the sleep from my head, I'm wondering what happened. As we pull up to the scene, we see the sheriff's patrol car with its lights on up ahead. His spotlight is slowly panning the scene, but we can't see a car.

"Getting out of the ambulance, making sure that there are no downed wires nearby, I walk toward the deputy. He points down a steep embankment, and there is the vehicle, resting on its roof. Looking around, I see no other access but down the 50-foot embankment."

1. What would you say in the initial radio report from the scene?
2. What special rescue equipment/assistance would you need?
3. Suppose that once you got down to the patients, they tell you the driver ran off and that they think he was hurt and probably drunk. What would you do then?

HANDOUT 38-3: Reinforcing Content Mastery Student's Name

CHAPTER 38 REVIEW

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

1. When placing cribbing around a car, the EMT should never _____ down.

2. Getting into a vehicle by opening a door or rolling down a window is called _____ _____.

3. Heating or cutting into the area around a steering wheel hub during extrication can deploy the vehicle's _____.

4. The first step of a three-part action plan for rapid disentanglement is _____ of the _____.

5. The _____ _____ prevents car doors from "popping" open during impact.

6. The EMT usually assumes that the patient in a vehicle collision is _____ until proven otherwise.

7. There are two types of window glass in vehicles, laminated and _____.

8. Without heavy hydraulic rescue tools, a roof can be removed quickly with _____ and a can of spray lubricant.

9. If the vehicle is upside down and resting directly on its body, then the only access to a patient may be through the _____ _____.

10. For small fires, a 15- or 20-pound class _____ fire extinguisher is useful.

11. There are _____ phases of the patient extrication or rescue process.

12. Early in the scene size-up, the EMT should try to determine the number of

_____, their _____, and the _____ _____ _____.

13. Any high-priority patient should be extricated _____.

14. Any personnel in and around the vehicle's _____ _____ should wear protective clothing.

15. The best eye protection for extrication is _____ _____.

16. The first form of traffic control at a vehicle collision is the _____.

17. At a scene where electrical wires are down, the EMT should establish a(n) _____ zone and a(n) _____ zone.

18. When the EMT is approaching a scene with wires down, he may feel a tingling in his legs as a result of a phenomenon called _____ _____.

19. If an engine is burning under a closed hood, leave the hood closed and extricate the patient rapidly while the _____ can still afford the patient protection.

20. An EMT should consider any vehicle involved in a collision to be _____.

HANDOUT 38-4: Reinforcing Content Mastery Student's Name

ACCESS AND RESCUE LISTING

Complete the following lists.

1. List at least five of the ten phases of the extrication process.

_____

_____

_____

_____

_____

2. List at least five types of specialty rescue teams.

_____

_____

_____

_____

_____

3. List at least four types of personal protective gear that should be worn at a vehicle extrication.

_____

_____

_____

_____

4. List at least four precautions to take when using flares at an accident scene.

_____

_____

_____

_____

5. List two actions an EMT might take if he encounters a ground gradient during a rescue operation.

_____

_____

HANDOUT 38-5: Reinforcing Content Mastery Student's Name

REORGANIZING A RESCUE

Read the following statements describing an EMT's involvement in a rescue. Several errors were made on the scene. The errors can be corrected by rearranging the order in which events happened. Do this by writing a "1" next to the event or statement that should have come first in time, a "2" next to the event or statement that should have come next, and so on.

_____ "Dispatch to Ambulance One: reported car into the trees at Lone Pine Road."

_____ The EMT proceeded to the car to help the patient.

_____ The ambulance driver got the stretcher out and proceeded to the car as well.

_____ The patient was alert and conscious and said her legs were pinned under the dash.

_____ The EMT smelled leaking gasoline.

_____ He returned to the ambulance and called for heavy rescue and the fire department.

_____ Heavy rescue started cutting doors.

_____ The EMT told them about the leaking gas he had smelled.

_____ The ambulance crew pulled back and waited for the pumper to wash down the road.

_____ The ambulance crew made a 360-degree walkaround of the scene for hazards.

_____ The ambulance crew entered the car for rapid extrication.

_____ The rescue captain decided to stabilize the vehicle with cribbing.

Chapter 38 Answer Key

HANDOUT 38-1: Chapter 38 Quiz

1. A

2. C

3. C

4. B

5. B

6. C

7. B

8. D

9. B

10. D

11. D

12. C

13. B

14. D

15. D

16. D

17. D

18. B

19. C

20. D

HANDOUT 38-2: In the Field

1.You would say that you established EMS Command and that you are requesting lights, heavy rescue, and high-angle rescue personnel and equipment.

2.You would need ropes, possibly heavy hydraulic tools, even aeromedical rescue.

3.You would inform the deputy and have him form a search party and proceed with a lost person wilderness search while you continue to care for the patients on scene.

HANDOUT 38-3: Chapter 38 Review

1. kneel

2.simple access

3. air bag

4.disposing; roof

5.Nader pin

6.unstable

7.tempered

8.hacksaws

9.floor pan

10.A:B:C

11. ten

12.patients; priorities; mechanisms of injury

13. rapidly

14.inner circle

15.safety goggles

16.ambulance

17.danger; safe

18.ground gradient

19.firewall

20.unstable

HANDOUT 38-4: Access and Rescue Listing

1.Any five: Preparing for the rescue. Sizing up the situation. Recognizing and managing hazards. Stabilizing the vehicle. Gaining access to the patient. Providing initial assessment and rapid trauma exam. Disentangling the patient. Immobilizing and extricating the patient. Providing a detailed physical exam, ongoing assessment, treatment, patient transport. Terminating the rescue.

2.Any five: Vehicle rescue. Water rescue. Ice rescue. High-angle rescue. Hazardous materials response. Trench rescue. Dive rescue. Back-country or wilderness rescue. Farm rescue. Confined-space rescue.

3.Any four: Rescue or firefighter's helmet. Safety goggles or safety glasses with side shields. Firefighter's or leather gloves. Turnout coat. Turnout pants, fire-resistant trousers, or jumpsuit. High-top, steel-toe work shoes.

4.Any four: Avoid spilled fuel, dried vegetation, and other combustibles when lighting or posi-

tioning flares. Don't throw flares out of a moving vehicle. Position flares at edge of danger zone as soon as ambulance is parked. Position flares every ten feet to channel traffic into unblocked lane. Position flares in both directions on two-lane roads. Don't use flares as traffic wands.

5. Turn 180°; either hop to a safe place on one foot or shuffle away, allowing no break in contact between your feet or between your feet and the ground.

HANDOUT 38-5: Reorganizing a Rescue

Reading down, the order of events should be as follows:

1, 10, 11, 3, 4, 5, 9, 6, 7, 2, 12, 8 (There may be some variation due to local operating procedures or protocols.)

CHAPTER 39

EMS Response to Terrorism

HANDOUT 39-1: Evaluating Content Mastery Student's Name

EVALUATION

CHAPTER 39 QUIZ

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

_____ **1.** Which of the following routes of entry into the body for a biological agent is seldom used in a terrorist situation?

A. Absorption **C.** Injection

B. Ingestion **D.** Inhalation

_____ **2.** The most effective and most common means of disseminating an agent used for terrorism is by entry through which body system?

A. Respiratory **C.** Digestive

B. Circulatory **D.** Integumentary

_____ **3.** Which of the following is considered a weapon of mass destruction?

A. Nuclear device **C.** Biological agent

B. Chemical agent **D.** All of the above

_____ **4.** Tactics are specific operational actions responders take to accomplish their assigned tasks. Which of the following is considered a tactic in regard to dealing with terrorism?

A. Process **C.** Preparation

B. Protection **D.** Protocols

_____ **5.** Which of the following is the *primary* harm associated with a nuclear blast?

A. Radiation illness **C.** Pressure injuries

B. Cancer **D.** Thermal burns

_____ **6.** Terrorism that involves groups or individuals whose terrorist activities are directed at the government without foreign direction is called:

A. federal terrorism. **C.** international terrorism.

B. domestic terrorism. **D.** territorial terrorism.

_____ **7.** The *E* in CBRNE agents stands for:

A. etiological. **C.** explosive.

B. environmental. **D.** exterior.

_____ **8.** A destructive device, such as a bomb, placed to be activated after an initial attack and timed to injure emergency responders and others is called a:

A. postincident device. **C.** secondary device.

B. primary device. **D.** tertiary device.

_____ **9.** The acronym of TRACEM-P is used to help recognize the harms posed by a terrorism threat. The *C* of TRACEM-P stands for:

A. chemical. **C.** cerebral.

B. cardiac. **D.** civilian.

_____**10.** Protection of the EMT is based on avoiding or minimizing exposure through the principles of:

A. retreat/notification/protection.

B. shielding/preparation/time.

C. establish sectors/advise dispatch/distance.

D. time/distance/shielding.

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

REINFORCEMENT

IN THE FIELD

Read the following real-life situation. Then answer the questions that follow.

You have been dispatched along with the airport fire department to an air terminal at your local airport that is a local distribution point for a national delivery and courier service. They have a package that broke open, and there is an unknown white powdery substance that fell in a 3-foot by 3-foot area on the floor. One person received a direct exposure. There were four other workers in the area at the time, and now all five are outside and standing in a group when you pull up in your ambulance. The fire department arrives on the scene at the same time. As you are told what happened by the shipping service supervisor, the fire captain asks you to check out the workers.

1. What action(s) should you take at this time?

You start to tell the five workers to stay where they are so you can ask them questions from a distance. Your partner walks over to the workers so he can get a good look at the white powdery substance. In the process he gets some on his gloved hands and sleeve. He starts to walk back, but you tell him to stay with the workers. The fire department is getting into full hazmat gear and is sending in a team to examine the area and attempt to determine what the substance is. The fire department captain tells you it will take at least 15 to 20 minutes before access to the source material can be made.

2. What action(s) should you take at this time?

HANDOUT 39-3: Evaluating Content Mastery Student's Name

CHAPTER 39 REVIEW

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

1. What do the initials CBRNE stand for?

C_____

B_____

R_____

N_____

E_____

2. It may be helpful to recognize suspicious incidents by using the acronym OTTO, which stands for:

O_____

T_____

T_____

O_____

3. It may be helpful to recognize the harm posed by a particular threat using the acronym TRACEM-P, which stands for:

T_____

R_____

A_____

C_____

E_____

M _____

P _____

4. The four routes or pathways through which a biological agent can enter the body are:

_____

_____

_____

_____

5. List three causative agents that could be used for biological weapons:

_____

_____

_____

6. List one viral agent that could be used as a biological weapon:

_____

7. The signs and symptoms of nerve agent poison can be remembered using the mnemonic SLUDGEM, which stands for:

S_____

L_____

U_____

D_____

G_____

E_____

M_____

HANDOUT 39-4: Evaluating Content Mastery Student's Name

EMS RESPONSE TO TERRORISM TRUE OR FALSE

Indicate if the following statements are true or false by writing T or F in the space provided.

_____ **1.** The *M* in the acronym TRACEM-P stands for *mechanical*.

_____ **2.** Shielding, which helps minimize exposure, refers only to the clothing and hazmat suit protection.

_____ **3.** Psychological harm is a primary harm of a chemical exposure.

_____ **4.** The skin is seldom the route through which biological agents enter the body.

_____ **5.** Time, distance, and shielding are the mainstays of self-protection at a radiological incident.

_____ **6.** Terrorism is a violent act that is dangerous to human life.

_____ **7.** Domestic terrorism involves groups or individuals whose terrorist activities are foreign-based and/or directed by groups outside the targeted country.

_____ **8.** The *E* of CBRNE agents of terrorism stands for *environmental*.

_____ **9.** The safety of the EMS provider is the most important consideration when responding to a potential terrorist incident.

_____**10.** Timing of a terrorist event, such as the anniversary of another terrorist event, should be a consideration to heighten security awareness.

Chapter 39 Answer Key

HANDOUT 39-1: Chapter 39 Quiz

1. A

2. A

3. D

4. B

5. D

6. B

7. C

8. C

9. A

10. D

HANDOUT 39-3: In the Field

1. Do not approach the workers, stay at a safe distance (which may be somewhat arbitrary at this point), and make sure you are upwind. Then instruct the five workers to stay where they are and to answer a few questions for you. Are any of them having any symptoms? Do they know what the substance is? Where is the source material (container that the powder came from)? Once this information is obtained, the next steps can be determined. For example, if they know what the substance may be, then CHEMTREC or poison control can be notified immediately for instructions on how to deal with this material, how to care for the victims, and what specific precautions (PPE) should be used. The type of symptoms that any of the workers may have will help to determine the urgency of decontamination. The EMT should

be thinking about personal safety first and applying the concept of time/distance/shielding as long as the potential hazard is unknown.

2. Have your partner who is now with the five workers determine if any of these victims are having signs and symptoms. As long as the type of substance is unknown, the workers (and your partner) must be decontaminated. You need to determine the best staging area for "decon," then call for all the necessary resources that will be needed to get the job done. Have all responding units that will be involved in decon go directly to the area that has been identified as safe. Ask dispatch to alert hospitals of the situation and determine which facilities can handle recently decontaminated patients (who may require a second decon at the hospital). Explain to the workers and your partner what is going on and that you want them to stay where they are until the hazmat and decontamination teams arrive. Tell your partner to continue monitoring everyone and advise if any of the workers develop signs or symptoms.

HANDOUT 39-3: Review

1. Chemical

Biological

Radiological

Nuclear

Explosive

2. Occupancy (location)

Type of event

Timing of the event

On-scene warning signs

3. Thermal

Radiological

Asphyxiation

Chemical

Etiological

Mechanical

Psychological

4. Absorption

Ingestion

Injection

Inhalation

5. Bacteria

Viruses

Toxins

6. Any one of the following:

Smallpox

Encephalitis

Viral hemorrhagic fevers (VHFs) (e.g., Ebola, dengue fever, yellow fever, Lassa fever)

7. Salivation, Lacrimation, Urination, Defecation, GI upset, Emesis, Miosis

HANDOUT 39-4: EMS Response to Terrorism True or False

1. T

2. F

3. F

4. T

5. T

6. T

7. F

8. F

9. T

10. T