



**Fire Fighter II  
Certification Preparation Guide  
August, 2009**

The logo for the Wisconsin Technical College System features a blue arch at the top. Below the arch, the words "WISCONSIN", "TECHNICAL COLLEGE", and "SYSTEM" are stacked in a bold, black, sans-serif font.

WISCONSIN  
TECHNICAL COLLEGE  
SYSTEM

The mission of the Wisconsin Technical College System is to provide citizens with comprehensive technical and adult education that:

- Enables individuals to acquire the occupational education necessary for full participation and advancement in the workforce;
- Provides remedial and basic skills education to enable individuals to function as literate members of society;
- Fosters economic development through on-site training and technical assistance to business, industry, and labor.



<http://systematic.wtcsystem.edu/Certification/fire>

The mission of Wisconsin Fire Service Training is to provide the state's fire service personnel with:

- A comprehensive education and training program in fire prevention and protection;
- Certification according to standards established by the National Fire Protection Association.

## Acknowledgement

The Wisconsin Technical College System (WTCS) gratefully acknowledges the assistance of many dedicated fire service personnel during both the development and the administration of the WTCS Fire Service Training (FST) Certification Program. It would be impossible to individually recognize each and every person who has helped to make the program the resounding success that it is.

Dan Clancy, President  
Annette Severson, Associate Vice President of Instruction

Recognition for their support, time and input is extended to the Wisconsin Fire Service Joint Advisory Committee Members past and present.

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As a member of the Training Resources and Data Exchange (TRADE) of the National Fire Academy, WTCS FST is committed to fostering the ongoing exchange of ideas, programs, and curricula among and between Federal, State and local fire training organizations. Many of the publications and training materials of the WTCS FST may be freely used to aid emergency responders in any way possible. This guide is one of the aforementioned publications. We would appreciate the accompaniment of a credit line with any portion of this guide that is used indicating WTCS FST as the origin of the material. We also ask that such materials borrowed from us not be sold for profit.

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## **Foreword**

On May 23, 1978, the Wisconsin Board of Vocational, Technical and Adult Education (WBVTAE), since renamed the Wisconsin Technical College System Board (WTCSB), approved the provision of certification to the Wisconsin fire service. The WTCSB also adopted the Professional Qualifications for the Fire Service, National Fire Protection Association (NFPA) 1000 Series Standards, and any future standards of the series as those which shall be used for identifying training course content for the certification of Wisconsin fire service personnel.

Fire service certification in the state of Wisconsin is not mandated by the WTCSB or any other state agency. Certification is rather an endeavor to be undertaken voluntarily by individuals or by collective members of fire departments. Those who aspire to Wisconsin Fire Service Certification, however, must satisfy the program requirements which are based on the appropriate NFPA Standards, and be tested for competency.

Certification is not necessarily a means of determining who may participate in the vocation or avocation of fire fighting, but is rather a symbol of dedication and commitment by the certified individual. Certification also provides documentation that the individual has demonstrated a high level of proficiency established through national consensus.

The WTCS Fire Service Training (FST) is ready and able to assist motivated individuals and/or fire departments in achieving their training and certification goals.

### **Assistance in Preparing for Certification**

The WTCS FST publishes a *Certification Program Policy and Procedures Manual* which lists each category and level of certification offered. These manuals contain pertinent information designed to assist candidates in preparing for the certification process. *Certification Program Policy and Procedures Manual* may be obtained from the WTCS web page:

<http://systematic.wtcsystem.org/fire/Firecert/Certprepguides.htm>.

### **Entrance into the Wisconsin Fire Service Certification System**

Qualified individuals may enter the certification system by contacting any of the institutions of the WTCS. Upon receipt of a request, appropriate information and application materials for any of the certification categories/levels available will be forwarded. A listing of WTCS institutions and their respective fire service coordinators/supervisors can be accessed from the WTCSB web page.

### **Application/State Summary Form Element**

All candidates seeking certification within the WTCS FST Certification System must submit completed application and state summary forms to the WTCS institution of their residency. Application and color-coded state summary forms can be obtained from the WTCS fire service coordinators/supervisors.

### **Written Examination Element**

Approved candidates will be allowed to write the state certification examination for the category and/or level chosen. The written examination will consist of 100 questions with a 90-minute time limit. Multiple choice, true/false and matching questions can be expected. If the

candidates successfully achieve a minimum score of 70 percent on the written examination, they will advance to the practical skills examination element of the process. Candidates who received their preparatory training through the state-approved training program and who fail their initial attempt at the written examination will be allowed up to 2 retests. If still unsuccessful after their second retest, these candidates are required to re-enroll in and complete the approved training program before being allowed to again write the examination. A variety of exams will be used to insure that no candidate is allowed to take the same exam more than once. Each exam will be based on the NFPA standard, current edition, and constructed from a bank of questions maintained by WTCS FST. Individuals granted advanced standing for documented training from sources other than the state-approved training program will be allowed a one-time challenge of the written examination. If successful in the challenge, they will be scheduled for the practical skills component of the certification process; if unsuccessful, they must complete the state-approved training program before being allowed to again write the examination.

### **Practical Skills Examination Element**

Candidates who have passed the written examination element will be assigned to a practical skills examination at an approved WTCS test site on a date of their choosing (pending availability of openings). All candidates are required to pay the standardized statewide practical skills examination fee (checks only, payable to the assigned WTCS test site).

Candidates will be responsible for all skills required by the appropriate NFPA standard, and must be prepared to perform any of the skills contained within the examination structure (a summary of the practical skills test stations is included in this document [see appendix]). Due to the large number of skills required by the standard, however, all skills cannot possibly be tested in a given examination. Rather, a number or series of skills will be selected for each exam through a random process. Skills to be tested will be selected to prevent prior knowledge by the candidates. The intent of this process is to insure that candidates are prepared to test on all of the skills required by the standard. Each candidate must perform a total of 7 evolutions contained within the Fire Fighter II examination structure, either individually or as a member of a team.

Practical examinations are graded on a 100 percent pass/fail basis. Throughout the design of the evaluation checklists, critical components of the skills will be strictly evaluated. "Non-fatal" components and many "local issue" components that vary from fire department to fire department will not be critically evaluated during the examination.

Candidates must successfully complete all skills stations of an examination to receive a passing grade. Candidates who fail up to 2 stations may retest on the same day at no additional cost. Such retests will be conducted only after all other candidates have completed their examinations. If, after retesting, the candidates fail the station(s) again, they must retake the entire examination at a later date. Candidates who fail 3 or more stations on their initial examination attempt must retake the entire examination at a later date as well. This requirement is necessitated by the random examination skills selection process. Such retakes also require payment of another examination fee.

### **Examination Results**

Candidates will be notified of certification examination results upon examination completion.

## **Certification**

Upon successful completion of all elements of the certification process, the candidate's name will be entered into the WTCS FST Certification database. Individuals will also receive, at no additional cost, an individualized certificate from the WTCS FST.

## **Denial and Revocation of Certification**

The WTCS FST will deny or revoke certification if the individual(s):

- Knowingly submits false information to the WTCS FST.
- Cheats during the examination process.

## **Appeal Process**

If certification is denied or revoked, the individual is entitled to due process, including appeal and hearing. The entire appeal process is listed in the WTCS FST *Certification Program Policy and Procedures Manual*.

## **Wisconsin Fire Service Certification Program**

### **Practical Skills Element**

### **Facial Hair/SCBA Issue**

An excerpt from WTCSB *Administrative Bulletin 99-16*, issued January 21, 2000, states the following:

- In any fire training course where instruction includes the use of a self-contained breathing apparatus (SCBA), the district may enroll and shall provide a plan of instruction to accommodate students with a condition that interferes with the facepiece seal.
- Students who are unable to meet all requirements of the SCBA portion of CERTIFIED FIRE FIGHTER courses will not be eligible for "state certification," however, they will receive a technical college certificate for participation in the fire training course.

National Fire Protection Association (NFPA) 1500, *Standard on Fire Department Occupational Safety and Health Program*, 1997 Edition, states, "members who have a beard or facial hair at any point where the SCBA facepiece is designed to seal with the face, or hair that could interfere with the operation of the unit, shall not be permitted to use respiratory protection at emergency incidents or in hazardous or potentially hazardous atmospheres. These restrictions shall apply regardless of the specific fit test measurement that can be obtained under test conditions."

Wisconsin Administrative Code, Department of Commerce, Chapter Comm 30, *Fire Department Safety and Health* states, "Comm 30.12, self-contained breathing apparatus. A fire fighter may not wear a beard or facial hair that comes in contact with a facepiece seal if the fire fighter's duties require him or her to use a self-contained breathing apparatus."

*Administrative Bulletin AB 99-16* addresses the facial hair/SCBA issue during the training phase only. It is the policy of the WTCS, FST that the facial hair requirements of NFPA Standard 1500 and Comm 30 shall be followed in certification practical skills examinations which contain a SCBA use requirement. As such, individuals who report for examinations with a beard or facial hair that interferes with SCBA facepiece seal shall not be allowed to participate in the examination.

## **Fire Fighter II Certification Preparation Guide**

This document is provided to assist candidates as they ready themselves to enter the WTCS FST Fire Fighter II Certification Process.

The NFPA 1001, *Standard for Fire Fighter Professional Qualifications*, current edition, Fire Fighter II JPRs are listed in the left column. The right column contains information that will help candidates identify study resources or other notes on how to prepare for the examination elements.

The primary reference material for meeting certification requirements is the International Fire Service Training Association (IFSTA) *Essentials of Fire Fighting*, 5<sup>th</sup> Edition (hereinafter referred to as “*IFSTA Essentials of Fire Fighting*, current edition”), the accompanying student applications package, and *Hazardous Materials for First Responders*, 3<sup>rd</sup> edition (hereinafter referred to as “*Hazardous Materials of First Responders*, current edition”), IFSTA. The *IFSTA Essentials of Fire Fighting*, current edition, however, may not address some items in-depth. Additional reference materials candidates should consider include:

- *Emergency Response Guidebook*, current edition, U. S. Department of Transportation
- *Standard on Fire Fighter Professional Qualifications*, NFPA 1001, 2008 Edition, National Fire Protection Association.
- *Principles of Vehicle Extrication*, 2<sup>nd</sup> Edition, IFSTA, 2000
- NFPA 472, *Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents*, 2008 Edition.
- IFSTA, NFPA 2008 NFPA 472 Competencies

**Self-Study, Written, and Practical Skills Requirements and Study Hints**

**NFPA 1001, Fire Fighter II, current edition  
IFSTA 5<sup>th</sup> Edition Curriculum**

<b><u>JPR's</u></b>	<b><u>Chapter References</u></b>	<b><u>Page References</u></b>
<p><b>6.1 General.</b> For qualification at Level II, the Fire Fighter I shall meet the general knowledge requirements in 6.1.1, the general skill requirements in 6.1.2, the JPRs defined in Sections 6.2 through 6.5 of this standard, and the requirements defined in Chapter 5.</p>		
<p><b>6.1.1 General Knowledge Requirements.</b> Responsibilities of the Fire Fighter II in assuming and transferring command within an incident management system, performing assigned duties in conformance with applicable NFPA and other safety regulations and AHJ procedures, and the role of a Fire Fighter II within the organization.</p>	Chapters 1, 2, 15	Pages 24-25, 35-40, 63-78, 792
<p><b>6.1.2 General Skill Requirements.</b> The ability to determine the need for command, organize and coordinate an incident management system until command is transferred, and function within an assigned role in an incident management system.</p>	Chapter 15	Pages 792, 821
<p><b>6.2 Fire Department Communications.</b> This duty shall involve performing activities related to initiating and reporting responses, according to the JPRs in 6.2.1 and 6.2.2.</p>		
<p><b>6.2.1</b> Complete a basic incident report, given the report forms, guidelines, and information, so that all pertinent information is recorded, the information is accurate, and the report is complete.</p> <p>(A) Requisite Knowledge. Content requirements for basic incident reports, the purpose and usefulness of accurate reports, consequences of inaccurate reports, how to obtain necessary information, and required coding procedures.</p> <p>(B) Requisite Skills. The ability to determine necessary codes, proof reports, and operate fire department computers or other equipment necessary to complete reports.</p>	Chapter 19	Pages 949, 955

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<p><b>6.2.2</b> Communicate the need for team assistance, given fire department communications equipment, SOPs, and a team, so that the supervisor is consistently informed of team needs, departmental SOPs are followed, and the assignment is accomplished safely.</p> <p><u>(A) Requisite Knowledge.</u> SOPs for alarm assignments and fire department radio communication procedures.</p> <p><u>(B) Requisite Skills.</u> The ability to operate fire department communications equipment.</p>	Chapter 19	Pages 792, 821, 926-949
<p><b>6.3</b> Fireground Operations. This duty shall involve performing activities necessary to ensure life safety, fire control, and property conservation, according to the JPRs in 6.3.1 through 6.3.4.</p>		
<p><b>6.3.1</b> Extinguish an ignitable liquid fire, operating as a member of a team, given an assignment, an attack line, personal protective equipment, a foam proportioning device, a nozzle, foam concentrates, and a water supply, so that the correct type of foam concentrate is selected for the given fuel and conditions, a properly proportioned foam stream is applied to the surface of the fuel to create and maintain a foam blanket, fire is extinguished, reignition is prevented, team protection is maintained with a foam stream, and the hazard is faced until retreat to safe haven is reached.</p> <p><u>(A) Requisite Knowledge.</u> Methods by which foam prevents or controls a hazard; principles by which foam is generated; causes for poor foam generation and corrective measures; difference between hydrocarbon and polar solvent fuels and the concentrates that work on each; the characteristics, uses, and limitations of fire-fighting foams; the advantages and disadvantages of using fog nozzles versus foam nozzles for foam application; foam stream application techniques; hazards associated with foam usage; and methods to reduce or avoid hazards.</p> <p><u>(B) Requisite Skills.</u> The ability to prepare a foam concentrate supply for use, assemble foam stream components, master various foam application techniques, and approach and retreat from spills as part of a coordinated team.</p>	Chapters 14 and 15	Pages 734-749, 773-780

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<p><b>6.3.2</b> Coordinate an interior attack line for a team's accomplishment of an assignment in a structure fire, given attack lines, personnel, personal protective equipment, and tools, so that crew integrity is established; attack techniques are selected for the given level of the fire (e.g., attic, grade level, upper levels, or basement); attack techniques are communicated to the attack teams; constant team coordination is maintained; fire growth and development is continuously evaluated; search, rescue, and ventilation requirements are communicated or managed; hazards are reported to the attack teams; and incident command is apprised of changing conditions.</p> <p><u>(A) Requisite Knowledge.</u> Selection of the nozzle and hose for fire attack, given different fire situations; selection of adapters and appliances to be used for specific fireground situations; dangerous building conditions created by fire and fire suppression activities; indicators of building collapse; the effects of fire and fire suppression activities on wood, masonry (brick, block, stone), cast iron, steel, reinforced concrete, gypsum wallboard, glass, and plaster on lath; search and rescue and ventilation procedures; indicators of structural instability; suppression approaches and practices for various types of structural fires; and the association between specific tools and special forcible entry needs.</p> <p><u>(B) Requisite Skills.</u> The ability to assemble a team, choose attack techniques for various levels of a fire (e.g., attic, grade level, upper levels, or basement), evaluate and forecast a fire's growth and development, select tools for forcible entry, incorporate search and rescue procedures and ventilation procedures in the completion of the attack team efforts, and determine developing hazardous building or fire conditions.</p>	Chapters 4, 13, 15	Pages 141-159, 643-652, 762-769, 792, 821
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<p><b>6.3.3</b> Control a flammable gas cylinder fire, operating as a member of a team, given an assignment, a cylinder outside of a structure, an attack line, personal protective equipment, and tools, so that crew integrity is maintained, contents are identified, safe havens are identified prior to advancing, open valves are closed, flames are not extinguished unless the leaking gas is eliminated, the cylinder is cooled, cylinder integrity is evaluated, hazardous conditions are recognized and acted upon, and the cylinder is faced during approach and retreat.</p> <p><u>(A) Requisite Knowledge.</u> Characteristics of pressurized flammable gases, elements of a gas cylinder, effects of heat and pressure on closed cylinders, boiling liquid expanding vapor explosion (BLEVE) signs and effects, methods for identifying contents, how to identify safe havens before approaching flammable gas cylinder fires, water stream usage and demands for pressurized cylinder fires, what to do if the fire is prematurely extinguished, valve types and their operation, alternative actions related to various hazards, and when to retreat.</p> <p><u>(B) Requisite Skills.</u> The ability to execute effective advances and retreats, apply various techniques for water application, assess cylinder integrity and changing cylinder conditions, operate control valves, and choose effective procedures when conditions change.</p>	Chapter 15	Pages 778-780, 820
<p><b>6.3.4</b> Protect evidence of fire cause and origin, given a flashlight and overhaul tools, so that the evidence is noted and protected from further disturbance until investigators can arrive on the scene.</p> <p><u>(A) Requisite Knowledge.</u> Methods to assess origin and cause; types of evidence; means to protect various types of evidence; the role and relationship of Fire Fighter IIs, criminal investigators, and insurance investigators in fire investigations; and the effects and problems associated with removing property or evidence from the scene.</p> <p><u>(B) Requisite Skills.</u> The ability to locate the fire's origin area, recognize possible causes, and protect the evidence.</p>	Chapter 18	Pages 907-918, 920

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<p><b>6.4 Rescue Operations.</b> This duty shall involve performing activities related to accessing and disentangling victims from motor vehicle accidents and helping special rescue teams, according to the JPRs in 6.4.1 and 6.4.2.</p>		
<p><b>6.4.1</b> Extricate a victim entrapped in a motor vehicle as part of a team, given stabilization and extrication tools, so that the vehicle is stabilized, the victim is disentangled without further injury, and hazards are managed.</p> <p><u>(A) Requisite Knowledge.</u> The fire department's role at a vehicle accident, points of strength and weakness in auto body construction, dangers associated with vehicle components and systems, the uses and limitations of hand and power extrication equipment, and safety procedures when using various types of extrication equipment.</p> <p><u>(B) Requisite Skills.</u> The ability to operate hand and power tools used for forcible entry and rescue as designed; use cribbing and shoring material; and choose and apply appropriate techniques for moving or removing vehicle roofs, doors, windshields, windows, steering wheels or columns, and the dashboard.</p>	Chapter 8	Pages 330-361, 387-390
<p><b>6.4.2</b> Assist rescue operation teams, given standard operating procedures, necessary rescue equipment, and an assignment, so that procedures are followed, rescue items are recognized and retrieved in the time as prescribed by the AHJ, and the assignment is completed.</p> <p><u>(A) Requisite Knowledge.</u> The fire fighter's role at a technical rescue operation, the hazards associated with technical rescue operations, types and uses for rescue tools, and rescue practices and goals.</p> <p><u>(B) Requisite Skills.</u> The ability to identify and retrieve various types of rescue tools, establish public barriers, and assist rescue teams as a member of the team when assigned.</p>	Chapter 8	Pages 306-327, 330-374, 391
<p><b>6.5 Prevention, Preparedness, and Maintenance.</b> This duty shall involve performing activities related to reducing the loss of life and property due to fire through hazard identification, inspection, and response readiness, according to the JPRs in 6.5.1 through 6.5.5.</p>		

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<p><b>6.5.1</b> Perform a fire safety survey in a private dwelling, given survey forms and procedures, so that fire and life safety hazards are identified, recommendations for their correction are made to the occupant, and unresolved issues are referred to the proper authority.</p> <p><u>(A) Requisite Knowledge.</u> Organizational policy and procedures, common causes of fire and their prevention, the importance of a fire safety survey and public fire education programs to fire department public relations and the community, and referral procedures.</p> <p><u>(B) Requisite Skills.</u> The ability to complete forms, recognize hazards, match findings to preapproved recommendations, and effectively communicate findings to occupants or referrals.</p>	Chapter 20	Pages 961-970, 976-982, 996
<p><b>6.5.2</b> Present fire safety information to station visitors or small groups, given prepared materials, so that all information is presented, the information is accurate, and questions are answered or referred.</p> <p><u>(A) Requisite Knowledge.</u> Parts of informational materials and how to use them, basic presentation skills, and departmental standard operating procedures for giving fire station tours.</p> <p><u>(B) Requisite Skills.</u> The ability to document presentations and to use prepared materials.</p>	Chapter 20	Pages 982-992, 997-998
<p><b>6.5.3</b> Prepare a preincident survey, given forms, necessary tools, and an assignment, so that all required occupancy information is recorded, items of concern are noted, and accurate sketches or diagrams are prepared.</p> <p><u>(A) Requisite Knowledge.</u> The sources of water supply for fire protection; the fundamentals of fire suppression and detection systems; common symbols used in diagramming construction features, utilities, hazards, and fire protection systems; departmental requirements for a preincident survey and form completion; and the importance of accurate diagrams.</p> <p><u>(B) Requisite Skills.</u> The ability to identify the components of fire suppression and detection systems; sketch the site, buildings, and special features; detect hazards and special considerations to include in the preincident sketch; and complete all related departmental forms.</p>	Chapters 12, 16, 20	Pages 594-605, 610-611, 626, 826-857, 970-982, 995

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<p><b>6.5.4</b> Maintain power plants, power tools, and lighting equipment, given tools and manufacturers' instructions, so that equipment is clean and maintained according to manufacturer and departmental guidelines, maintenance is recorded, and equipment is placed in a ready state or reported otherwise.</p> <p><u>(A) Requisite Knowledge.</u> Types of cleaning methods, correct use of cleaning solvents, manufacturer and departmental guidelines for maintaining equipment and its documentation, and problem-reporting practices.</p> <p><u>(B) Requisite Skills.</u> The ability to select correct tools; follow guidelines; complete recording and reporting procedures; and operate power plants, power tools, and lighting equipment.</p>	Chapter 8	330-334, 386
<p><b>6.5.5</b> Perform an annual service test on fire hose, given a pump, a marking device, pressure gauges, a timer, record sheets, and related equipment, so that procedures are followed, the condition of the hose is evaluated, any damaged hose is removed from service, and the results are recorded.</p> <p><u>(A) Requisite Knowledge.</u> Procedures for safely conducting hose service testing, indicators that dictate any hose be removed from service, and recording procedures for hose test results.</p> <p><u>(B) Requisite Skills.</u> The ability to operate hose testing equipment and nozzles and to record results.</p>	Chapter 13	680-682, 712

**Self-Study, Written, and Practical Skills Requirements and Study Hints**

**NFPA 472, Current Edition  
Hazardous Materials For First Responders, Third Edition  
AWARENESS**

<b><u>JPR's</u></b>	<b><u>Chapter References</u></b>	<b><u>Page References</u></b>
<b>4.1 General</b>		
<b>4.1.1 Introduction</b>		
<b>4.1.1.1</b> Awareness level personnel shall be persons who, in the course of their normal duties, could encounter an emergency involving hazardous materials/weapons of mass destruction (WMD) and who are expected to recognize the presence of the hazardous materials/WMD, protect themselves, call for trained personnel, and secure the area.		
<b>4.1.1.2</b> Awareness level personnel shall be trained to meet all competencies of this chapter.	Chapter 1	Pages 11-12
<b>4.1.1.3</b> Awareness level personnel shall receive additional training to meet applicable governmental occupational health and safety regulations.	Chapter 1	Pages 11-12
<b>4.1.2 Goal</b>		
<b>4.1.2.1</b> The goal of the competencies at the awareness level shall be to provide personnel already on the scene of a hazardous materials/WMD incident with the knowledge and skills to perform the tasks in 4.1.2.2 safely and effectively.	Chapter 1	Pages 12-13
<b>4.1.2.2</b> When already on the scene of a hazardous materials/WMD incident, the awareness level personnel shall be able to perform the following tasks:		

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AWARENESS**

<p><b>(1)</b> Analyze the incident to determine both the hazardous material/WMD present and the basic hazard and response information for each hazardous material/WMD agent by completing the following tasks:</p> <p><b>(a)</b> Detect the presence of hazardous materials/WMD.</p> <p><b>(b)</b> Survey a hazardous materials/WMD incident from a safe location to identify the name, UN/NA identification number, type of placard, or other distinctive marking applied for the hazardous materials/WMD involved.</p> <p><b>(c)</b> Collect hazard information from the current edition of the DOT Emergency Response Guidebook.</p>	Chapter 3	Pages 95-108
<p><b>(2)</b> Implement actions consistent with the emergency response plan, the standard operating procedures, and the current edition of the DOT Emergency Response Guidebook by completing the following tasks:</p> <p><b>(a)</b> Initiate protective actions.</p> <p><b>(b)</b> Initiate the notification process.</p>	Chapter 5	Pages 284-286
<b>4.2 Competencies — Analyzing the Incident</b>		
<b>4.2.1 Detecting the Presence of Hazardous Materials/WMD.</b> Given examples of various situations, awareness level personnel shall identify those situations where hazardous materials/WMD are present and shall meet the following requirements:	Chapters 1 and 3	Pages 9-10, 95-108
<b>4.2.1(1)</b> Identify the definitions of both hazardous material (or dangerous goods, in Canada) and WMD.	Chapter 1	Pages 17-32
<b>4.2.1(2)</b> Identify the UN/DOT hazard classes and divisions of hazardous materials/WMD and identify common examples of materials in each hazard class or division.	Chapter 3	Pages 158-160

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<b>4.2.1(3)</b> Identify the primary hazards associated with each UN/DOT hazard class and division.	Chapters 2 and 3	Pages 58-61, 158-160
<b>4.2.1(4)</b> Identify the difference between hazardous materials/WMD incidents and other emergencies.	Chapter 2	Page 45
<b>4.2.1(5)</b> Identify typical occupancies and locations in the community where hazardous materials/WMD are manufactured, transported, stored, used, or disposed of.	Chapter 3	Pages 112-113
<b>4.2.1(6)</b> Identify typical container shapes that can indicate the presence of hazardous materials/WMD.	Chapter 3	Page 14
<b>4.2.1(7)</b> Identify facility and transportation markings and colors that indicate hazardous materials/WMD, including the following:  <b>(a)</b> Transportation markings, including UN/NA identification number marks, marine pollutant mark, elevated temperature (HOT) mark, commodity marking, and inhalation hazard mark <b>(b)</b> NFPA 704, Standard System for the Identification of the Hazards of Materials for Emergency Response, markings <b>(c)</b> Military hazardous materials/WMD markings <b>(d)</b> Special hazard communication markings for each hazard class <b>(e)</b> Pipeline markings <b>(f)</b> Container markings	Chapter 3	Pages 95-108  Pages: (a) 156-158, 169-172 (b) 184-187 (c) 194-195 (d) 187 (e) 195-200 (f) 183-184
<b>4.2.1(8)</b> Given an NFPA 704 marking, describe the significance of the colors, numbers, and special symbols.	Chapter 3	Pages 184-187
<b>4.2.1(9)</b> Identify U.S. and Canadian placards and labels that indicate hazardous materials/WMD.	Chapter 3	Pages 95-108, 158, 160-169, 172-178, 187-194

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<p><b>4.2.1(10)</b> Identify the following basic information on material safety data sheets (MSDS) and shipping papers for hazardous materials:</p> <p>(a) Identify where to find MSDS. (b) Identify major sections of an MSDS. (c) Identify the entries on shipping papers that indicate the presence of hazardous materials. (d) Match the name of the shipping papers found in transportation (air, highway, rail, and water) with the mode of transportation. (e) Identify the person responsible for having the shipping papers in each mode of transportation. (f) Identify where the shipping papers are found in each mode of transportation. (g) Identify where the papers can be found in an emergency in each mode of transportation.</p>	Chapter 3	Pages: (a) 205-207 (b) 205-208 (c) 203-205 (d) 203-205 (e) 203-205 (f) 203-205 (g) 203-205
<p><b>4.2.1(11)</b> Identify examples of clues (other than occupancy/ location, container shape, markings/color, placards/ labels, MSDS, and shipping papers) the sight, sound, and odor of which indicate hazardous materials/WMD.</p>	Chapter 3	Pages 216-218
<p><b>4.2.1(12)</b> Describe the limitations of using the senses in determining the presence or absence of hazardous materials/WMD.</p>	Chapter 3	Pages 216-218
<p><b>4.2.1(13)</b> Identify at least four types of locations that could be targets for criminal or terrorist activity using hazardous materials/WMD.</p>	Chapter 9	Pages 445-447
<p><b>4.2.1(14)</b> Describe the difference between a chemical and a biological incident.</p>	Chapter 9	Pages 447-449, 458-460
<p><b>4.2.1(15)</b> Identify at least four indicators of possible criminal or terrorist activity involving chemical agents.</p>	Chapter 9	Pages 458-460
<p><b>4.2.1(16)</b> Identify at least four indicators of possible criminal or terrorist activity involving biological agents.</p>	Chapter 9	Pages 447-449

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<b>4.2.1(17)</b> Identify at least four indicators of possible criminal or terrorist activity involving radiological agents.	Chapter 9	Pages 454-458
<b>4.2.1(18)</b> Identify at least four indicators of possible criminal or terrorist activity involving illicit laboratories (clandestine laboratories, weapons lab, ricin lab).	Chapter 9	Pages 486-495
<b>4.2.1(19)</b> Identify at least four indicators of possible criminal or terrorist activity involving explosives.	Chapter 9	Pages 476-486
<b>4.2.1(20)</b> Identify at least four indicators of secondary devices.	Chapter 9	Pages 479, 497-498
<b>4.2.2 Surveying Hazardous Materials/WMD Incidents.</b> Given examples of hazardous materials/WMD incidents, awareness level personnel shall, from a safe location, identify the hazardous material(s)/WMD involved in each situation by name, UN/NA identification number, or type placard applied and shall meet the following requirements:	Chapter 3	Pages 95-108
<b>(1)</b> Identify difficulties encountered in determining the specific names of hazardous materials/WMD at facilities and in transportation.	Chapter 3	Page 221
<b>(2)</b> Identify sources for obtaining the names of, UN/NA identification numbers for, or types of placard associated with hazardous materials/WMD in transportation.	Chapter 3	Page 157
<b>(3)</b> Identify sources for obtaining the names of hazardous materials/WMD at a facility.	Chapter 3	Pages 202-203
<b>4.2.3 Collecting Hazard Information.</b> Given the identity of various hazardous materials/WMD (name, UN/NA identification number, or type placard), awareness level personnel shall identify the fire, explosion, and health hazard information for each material by using the current edition of the DOT Emergency Response Guidebook and shall meet the following requirements:	Chapter 3	Pages 208-211

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<b>(1)</b> Identify the three methods for determining the guidebook page for a hazardous material/WMD.	Chapter 3	Pages 208-211
<b>(2)</b> Identify the two general types of hazards found on each guidebook page.	Chapter 3	Pages 211-214
<b>4.4 Competencies – Implementing the Planned Response.</b>		
<b>4.4.1 Initiating Protective Actions.</b> Given examples of hazardous materials/WMD incidents, the emergency response plan, the standard operating procedures, and the current edition of the DOT Emergency Response Guidebook, awareness level personnel shall be able to identify the actions to be taken to protect themselves and others and to control access to the scene and shall meet the following requirements:	Chapter 5	Pages 280, 290
<b>4.4.1(1)</b> Identify the location of both the emergency response plan and/or standard operating procedures.	Chapters 3 and 4	Pages 111, 240-241
<b>4.4.1(2)</b> Identify the role of the awareness level personnel during hazardous materials/WMD incidents.	Chapter 1	Pages 12-13
<b>4.4.1(3)</b> Identify the following basic precautions to be taken to protect themselves and others in hazardous materials/WMD incidents: <b>(a)</b> Identify the precautions necessary when providing emergency medical care to victims of hazardous materials/WMD incidents. <b>(b)</b> Identify typical ignition sources found at the scene of hazardous materials/WMD incidents. <b>(c)</b> Identify the ways hazardous materials/WMD are harmful to people, the environment, and property. <b>(d)</b> Identify the general routes of entry for human exposure to hazardous materials/WMD.	Chapters 2 and 5	Page 280  Pages: (a) 286 (b) 49 (c) 45-68, 70-71, 86-88 (d) 71-73

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<b>4.4.1(4)</b> Given examples of hazardous materials/WMD and the identity of each hazardous material/WMD (name, UN/NA identification number, or type placard), identify the following response information: (a) Emergency action (fire, spill, or leak and first aid) (b) Personal protective equipment necessary (c) Initial isolation and protective action distances	Chapter 3	Pages: (a) 211-214 (b) 211-214 (c) 211-214, 214-216
<b>4.4.1(5)</b> Given the name of a hazardous material, identify the recommended personal protective equipment from the following list: <b>(a)</b> Street clothing and work uniforms <b>(b)</b> Structural fire-fighting protective clothing <b>(c)</b> Positive pressure self-contained breathing apparatus <b>(d)</b> Chemical-protective clothing and equipment	Chapters 3 and 6	Pages 211-214  Pages: (a) 352 (b) 327-328 (c) 335 (d) 328-331
<b>4.4.1(6)</b> Identify the definitions for each of the following protective actions: <b>(a)</b> Isolation of the hazard area and denial of entry <b>(b)</b> Evacuation <b>(c)</b> Sheltering in-place	Chapter 5	Pages: (a) 280 (b) 290 (c) 290-291
<b>4.4.1(7)</b> Identify the size and shape of recommended initial isolation and protective action zones.	Chapters 3 and 5	Pages 214-216, 280-284
<b>4.4.1(8)</b> Describe the difference between small and large spills as found in the Table of Initial Isolation and Protective Action Distances in the DOT Emergency Response Guidebook.	Chapter 3	Page 214
<b>4.4.1(9)</b> Identify the circumstances under which the following distances are used at a hazardous materials /WMD incidents: <b>(a)</b> Table of Initial Isolation and Protective Action Distances <b>(b)</b> Isolation distances in the numbered guides	Chapter 3	Pages: (a) 214-216 (b) 214-216

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<b>4.4.1(10)</b> Describe the difference between the isolation distances on the orange-bordered guidebook pages and the protective action distances on the green-bordered ERG (Emergency Response Guidebook) pages.	Chapter 3	Pages 208-211
<b>4.4.1(11)</b> Identify the techniques used to isolate the hazard area and deny entry to unauthorized persons at hazardous materials/WMD incidents.	Chapters 3 and 5	Pages 216-218, 280
<b>4.4.1(12)</b> Identify at least four specific actions necessary when an incident is suspected to involve criminal or terrorist activity.	Chapter 3	Pages 216-218
<b>4.4.2 Initiating the Notification Process.</b> Given scenarios involving hazardous materials/WMD incidents, awareness level personnel shall identify the initial notifications to be made and how to make them, consistent with the emergency response plan and/or standard operating procedures.	Chapter 5	Pages 285-286

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<b>JPR's</b>	<b>Chapter References</b>	<b>Page References</b>
<b>5.1 General.</b>		
<b>5.1.1.1</b> The operations level responder shall be that person who responds to hazardous materials/weapons of mass destruction (WMD) incidents for the purpose of protecting nearby persons, the environment, or property from the effects of the release.	Chapter 1	Pages 11-17
<b>5.1.1.2</b> The operations level responder shall be trained to meet all competencies at the awareness level (Chapter 4) and the competencies of this chapter.	Chapter 1	Pages 13-17
<b>5.1.1.3</b> The operations level responder shall receive additional training to meet applicable governmental occupational health and safety regulations.	Chapter 1	Pages 11-12
<b>5.1.2 Goal.</b>		
<b>5.1.2.1</b> The goal of the competencies at this level shall be to provide operations level responders with the knowledge and skills to perform the core competencies in 5.1.2.2 safely.		
<b>5.1.2.2(1)</b> When responding to hazardous materials/WMD incidents, operations level responders shall be able to perform the following tasks:		

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<p><b>(1)</b> Analyze a hazardous materials/WMD incident to determine the scope of the problem and potential outcomes by completing the following tasks:</p> <p><b>(a)</b> Survey a hazardous materials/WMD incident to identify the containers and materials involved, determine whether hazardous materials/WMD have been released, and evaluate the surrounding conditions.</p> <p><b>(b)</b> Collect hazard and response information from MSDS; CHEMTREC/CANUTEC/SETIQ; local, state, and federal authorities; and shipper/manufacturer contacts.</p> <p><b>(c)</b> Predict the likely behavior of a hazardous material/WMD and its container.</p> <p><b>(d)</b> Estimate the potential harm at a hazardous materials/WMD incident.</p>	<p>Chapter 4</p> <p>(a) Chapter 4 (b) Chapter 1 (c) Chapter 4 (d) Chapter 4</p>	<p>Pages 249-266</p> <p>Pages: (a) 249-266 (b) 32-35 (c) 255-266 (d) 255-266</p>
<p><b>5.1.2.2(2)</b> Plan an initial response to a hazardous materials/WMD incident within the capabilities and competencies of available personnel and personal protective equipment by completing the following tasks:</p> <p><b>(a)</b> Describe the response objectives for the hazardous materials/WMD incident.</p> <p><b>(b)</b> Describe the response options available for each objective.</p> <p><b>(c)</b> Determine whether the personal protective equipment provided is appropriate for implementing each option.</p> <p><b>(d)</b> Describe emergency decontamination procedures.</p> <p><b>(e)</b> Develop a plan of action, including safety considerations.</p>	<p>Chapter 4</p> <p>(a) Chapter 4 (b) Chapter 4 (c) Chapter 6 (d) Chapter 7 (e) Chapter 4</p>	<p>Pages 266-272</p> <p>Pages: (a) 266-272 (b) 269-270 (c) 348-354 (d) 374-393 (e) 270-272</p>

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<p><b>5.1.2.2(3)</b> Implement the planned response for a hazardous materials/WMD incident to favorably change the outcomes consistent with the emergency response plan and/or standard operating procedures by completing the following tasks:</p> <p>(a) Establish and enforce scene control procedures, including control zones, emergency decontamination, and communications.</p> <p>(b) Where criminal or terrorist acts are suspected, establish means of evidence preservation.</p> <p>(c) Initiate an incident command system (ICS) for hazardous materials/WMD incidents.</p> <p>(d) Perform tasks assigned as identified in the incident action plan.</p> <p>(e) Demonstrate emergency decontamination.</p>	<p>Chapter 4</p> <p>(a) Chapters 4, 5, 7 (b) Chapter 9 (c) Chapter 6 (d) Chapter 4 (e) Chapter 7</p>	<p>Pages 272-273</p> <p>Pages: (a) 241-244, 280-284, 374-393 (b) 498-500 (c) 228-240 (d) 272-273 (e) 379-380</p>
<p><b>5.1.2.2(4)</b> Evaluate the progress of the actions taken at a hazardous materials/WMD incident to ensure that the response objectives are being met safely, effectively, and efficiently by completing the following tasks:</p> <p>(a) Evaluate the status of the actions taken in accomplishing the response objectives.</p> <p>(b) Communicate the status of the planned response.</p>	<p>Chapter 4</p> <p>(a) Chapter 4 (b) Chapter 4</p>	<p>Pages 273</p> <p>Pages: (a) 273 (b) 241-244, 273</p>
<p><b>5.2.1 Surveying Hazardous Materials/WMD Incidents.</b> Given scenarios involving hazardous materials/WMD incidents, the operations level responder shall survey the incident to identify the containers and materials involved, determine whether hazardous materials/WMD have been released, and evaluate the surrounding conditions and shall meet the requirements of 5.2.1.1 through 5.2.1.6.</p>	<p>Chapter 4</p>	<p>Pages 249-266</p>

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<b>5.2.1.1</b> Given three examples each of liquid, gas, and solid hazardous material or WMD, including various hazard classes, operations level personnel shall identify the general shapes of containers in which the hazardous materials/WMD are typically found.	Chapter 3	Pages 109-221
<b>5.2.1.1.1</b> Given examples of the following tank cars, the operations level responder shall identify each tank car by type, as follows:		
<b>(1)</b> Cryogenic liquid tank cars	Chapter 3	Pages 118-124
<b>(2)</b> Nonpressure tank cars (general service or low pressure cars)	Chapter 3	Pages 118-124
<b>(3)</b> Pressure tank cars	Chapter 3	Pages 118-124
<b>5.2.1.1.2</b> Given examples of the following intermodal tanks, the operations level responder shall identify each intermodal tank by type, as follows:	Chapter 3	Pages 134-138
<b>(1)</b> Nonpressure intermodal tanks	Chapter 3	Pages 134-138
<b>(2)</b> Pressure intermodal tanks	Chapter 3	Pages 134-138
<b>(3)</b> Specialized intermodal tanks, including the following: <b>(a)</b> Cryogenic intermodal tanks <b>(b)</b> Tube modules	Chapter 3  (a) Chapter 3 (b) Chapter 3	Pages 134-138  Pages: (a) 134-138 (b) 134-138
<b>5.2.1.1.3</b> Given examples of the following cargo tanks, the operations level responder shall identify each cargo tank by type, as follows:	Chapter 3	Pages 124-134
<b>(1)</b> Compressed gas tube trailers	Chapter 3	Pages 124-134
<b>(2)</b> Corrosive liquid tanks	Chapter 3	Pages 124-134
<b>(3)</b> Cryogenic liquid tanks	Chapter 3	Pages 124-134
<b>(4)</b> Dry bulk cargo tanks	Chapter 3	Pages 124-134
<b>(5)</b> High pressure tanks	Chapter 3	Pages 124-134
<b>(6)</b> Low pressure chemical tanks	Chapter 3	Pages 124-134

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<b>(7)</b> Nonpressure liquid tanks	Chapter 3	Pages 124-134
<b>5.2.1.1.4</b> Given examples of the following storage tanks, the operations level responder shall identify each tank by type, as follows:		Pages 114-120
<b>(1)</b> Cryogenic liquid tank	Chapter 3	Page 118, 120
<b>(2)</b> Nonpressure tank	Chapter 3	Pages 115-118
<b>(3)</b> Pressure tank	Chapter 3	Page 118-120
<b>5.2.1.1.5</b> Given examples of the following nonbulk packaging, the operations level responder shall identify each package by type, as follows:	Chapter 3	Pages 146-150
<b>(1)</b> Bags	Chapter 3	Page 148
<b>(2)</b> Carboys	Chapter 3	Page 149
<b>(3)</b> Cylinders	Chapter 3	Pages 149-150
<b>(4)</b> Drums	Chapter 3	Page 150
<b>(5)</b> Dewar flask (cryogenic liquids)	Chapter 3	Pages 129-131
<b>5.2.1.1.6</b> Given examples of the following radioactive material packages, the operations level responder shall identify the characteristics of each container or package by type, as follows:		
<b>(1)</b> Excepted	Chapter 3	Pages 150-153
<b>(2)</b> Industrial	Chapter 3	Pages 150-153
<b>(3)</b> Type A	Chapter 3	Pages 150-153
<b>(4)</b> Type B	Chapter 3	Pages 150-153
<b>(5)</b> Type C		
<b>5.2.1.2</b> Given examples of containers, the operations level responder shall identify the markings that differentiate one container from another.	Chapter 3	Pages 154-202
<b>5.2.1.2.1</b> Given examples of the following marked transport vehicles and their corresponding shipping papers, the operations level responder shall identify the following vehicle or tank identification marking:		
<b>(1)</b> Highway transport vehicles, including cargo tanks	Chapter 3	Pages 156-172, 179
<b>(2)</b> Intermodal equipment, including tank containers	Chapter 3	Pages 180-183
<b>(3)</b> Rail transport vehicles, including tank cars	Chapter 3	Pages 156-172, 179-180

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<b>5.2.1.2.2</b> Given examples of facility containers, the operations level responder shall identify the markings indicating container size, product contained, and/or site identification numbers.	Chapter 3	Pages 183-202
<b>5.2.1.3</b> Given examples of hazardous materials incidents, the operations level responder shall identify the name(s) of the hazardous material(s) in 5.2.1.3.1 through 5.2.1.3.3.	Chapter 3	Pages 183-202
<b>5.2.1.3.1</b> The operations level responder shall identify the following information on a pipeline marker:		
<b>(1)</b> Emergency telephone number	Chapter 3	Pages 195-200
<b>(2)</b> Owner	Chapter 3	Pages 195-200
<b>(3)</b> Product	Chapter 3	Pages 195-200
<b>5.2.1.3.2</b> Given a pesticide label, the operations level responder shall identify each of the following pieces of information, then match the piece of information to its significance in surveying hazardous materials incidents:		
<b>(1)</b> Active ingredient	Chapter 3	Pages 200-202
<b>(2)</b> Hazard statement	Chapter 3	Pages 200-202
<b>(3)</b> Name of pesticide	Chapter 3	Pages 200-202
<b>(4)</b> Pest control product (PCP) number (in Canada)	Chapter 3	Pages 200-202
<b>(5)</b> Precautionary statement	Chapter 3	Pages 200-202
<b>(6)</b> Signal word	Chapter 3	Pages 200-202
<b>5.2.1.3.3</b> Given a label for a radioactive material, the operations level responder shall identify the type or category of label, contents, activity, transport index, and criticality safety index as applicable.	Chapter 3	Pages 167, 176-177
<b>5.2.1.4</b> The operations level responder shall identify and list the surrounding conditions that should be noted when a hazardous materials/WMD incident is surveyed.	Chapter 4	Pages 252-254
<b>5.2.1.5</b> The operations level responder shall give examples of ways to verify information obtained from the survey of a hazardous materials/WMD incident.	Chapter 4	Pages 249-266

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<b>5.2.1.6</b> The operations level responder shall identify at least three additional hazards that could be associated with an incident involving terrorist or criminal activities.	Chapter 9	Pages 443-445
<b>5.2.2 Collecting Hazard and Response Information.</b> Given scenarios involving known hazardous materials/WMD, the operations level responder shall collect hazard and response information using MSDS, CHEMTREC/CANUTEC/SETIQ, governmental authorities, and shippers and manufacturers and shall meet the following requirements:	Chapters 1 and 3	Pages 32-35, 158-177, 202-216
<b>5.2.2(1)</b> Match the definitions associated with the UN/DOT hazard classes and divisions of hazardous materials/WMD, including refrigerated liquefied gases and cryogenic liquids, with the class or division.	Chapter 3	Pages 154-168
<b>5.2.2(2)</b> Identify two ways to obtain an MSDS in an emergency.	Chapter 3	Pages 205-207
<b>5.2.2(3)</b> Using an MSDS for a specified material, identify the following hazard and response information:  <b>(a)</b> Physical and chemical characteristics <b>(b)</b> Physical hazards of the material <b>(c)</b> Health hazards of the material <b>(d)</b> Signs and symptoms of exposure <b>(e)</b> Routes of entry <b>(f)</b> Permissible exposure limits <b>(g)</b> Responsible party contact <b>(h)</b> Precautions for safe handling (including hygiene practices, protective measures, and procedures for cleanup of spills and leaks) <b>(i)</b> Applicable control measures, including personal protective equipment <b>(j)</b> Emergency and first-aid procedures	Chapter 3  Chapters 2 and 3	Pages 205-207  Pages: <b>(a)</b> 45-58, 207-208 <b>(b)</b> 58-88, 207-208 <b>(c)</b> 58-88, 207-208 <b>(d)</b> 85, 207-208 <b>(e)</b> 71-73, 207-208 <b>(f)</b> 73-81, 207-208 <b>(g)</b> 207-208 <b>(h)</b> 207-208 <b>(i)</b> 207-208 <b>(j)</b> 207-208

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<b>5.2.2(4)</b> Identify the following:  (a) Type of assistance provided by CHEMTREC/CANUTEC/SETIQ and governmental authorities (b) Procedure for contacting CHEMTREC/CANUTEC/SETIQ and governmental authorities (c) Information to be furnished to CHEMTREC/CANUTEC/SETIQ and governmental authorities	Chapter 1  (a) Chapter 1 (b) Chapter 1	Pages: (a) 32-35 (b) 32-35 (c) 32-35
<b>5.2.2(5)</b> Identify two methods of contacting the manufacturer or shipper to obtain hazard and response information.	Chapter 3	Pages 202-216
<b>5.2.2(6)</b> Identify the type of assistance provided by governmental authorities with respect to criminal or terrorist activities involving the release or potential release of hazardous materials/WMD.	Chapter 9	Pages 496-508
<b>5.2.2(7)</b> Identify the procedure for contacting local, state, and federal authorities as specified in the emergency response plan and/or standard operating procedures.	Chapter 5	Pages 285
<b>5.2.2(8)</b> Describe the properties and characteristics of the following:  (a) Alpha radiation (b) Beta radiation (c) Gamma radiation (d) Neutron radiation	Chapter 2	Pages: (a) 64 (b) 64 (c) 64 (d) 65
<b>5.2.3 Predicting the Likely Behavior of a Material and Its Container.</b> Given scenarios involving hazardous materials/WMD incidents, each with a single hazardous material/WMD, the operations level responder shall predict the likely behavior of the material or agent and its container and shall meet the following requirements:	Chapter 4	Pages 255-266

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<p><b>5.2.3(1)</b> Interpret the hazard and response information obtained from the current edition of the DOT Emergency Response Guidebook, MSDS, CHEMTREC/CANUTEC/SETIQ, governmental authorities, and shipper and manufacturer contacts, as follows:</p>	<p>Chapter 4</p>	<p>Pages 249-266</p>
<p><b>(a)</b> Match the following chemical and physical properties with their significance and impact on the behavior of the container and its contents:</p> <ul style="list-style-type: none"> <li>i. Boiling point</li> <li>ii. Chemical reactivity</li> <li>iii. Corrosivity (pH)</li> <li>iv. Flammable (explosive) range [lower explosive limit (LEL) and upper explosive limit (UEL)]</li> <li>v. Flash point</li> <li>vi. Ignition (autoignition) temperature</li> <li>vii. Particle size</li> <li>viii. Persistence</li> <li>ix. Physical state (solid, liquid, gas)</li> <li>x. Radiation (ionizing and non-ionizing)</li> <li>xi. Specific gravity</li> <li>xii. Toxic products of combustion</li> <li>xiii. Vapor density</li> <li>xiv. Vapor pressure</li> <li>xv. Water solubility</li> </ul>	<p>Chapter 2</p> <p>(i-vii) Chapter 2 (viii) NFPA 472 (ix-xi) Chapter 7 (xii) Chapter 8 (ix-xv) Chapter 2</p>	<p>Pages (a) 45-58</p> <p>Pages: (i) 51-52 (ii) 54-58 (iii) 81-82 (iv) 49-50 (v) 47 (vi) 47-48 (vii) 65 (viii) 2008 NFPA 472 Competencies (ix) 46 (x) 63-65 (xi) 53-54 (xii) 372, 436 (xiii) 52 (xiv) 50-51 (xv) 52-53</p>
<p><b>(b)</b> Identify the differences between the following terms:</p> <ul style="list-style-type: none"> <li>i. Contamination and secondary contamination</li> <li>ii. Exposure and contamination</li> <li>iii. Exposure and hazard</li> <li>iv. Infectious and contagious</li> <li>v. Acute effects and chronic effects</li> <li>vi. Acute exposures and chronic exposures</li> </ul>	<p>(i) Chapter 7 (ii) Chapter 7 (iii) Chapter 2 (iv) Chapter 9 (v) Chapter 2 (vi) Chapter 2</p>	<p>Pages: (i) 371-374 (ii) 372 (iii) 45 (iv) 447-454 (v) 45 (vi) 45</p>

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<b>5.2.3(2)</b> Identify three types of stress that can cause a container system to release its contents.	Chapter 4	Page 256
<b>5.2.3(3)</b> Identify five ways in which containers can breach.	Chapter 4	Pages 256-257
<b>5.2.3(4)</b> Identify four ways in which containers can release their contents.	Chapter 4	Pages 257-258
<b>5.2.3(5)</b> Identify at least four dispersion patterns that can be created upon release of a hazardous material.	Chapter 4	Pages 258-265
<b>5.2.3(6)</b> Identify the time frames for estimating the duration that hazardous materials/WMD will present an exposure risk.	Chapter 4	Page 266
<b>5.2.3(7)</b> Identify the health and physical hazards that could cause harm.	Chapter 2	Pages 58-88
<b>5.2.3(8)</b> Identify the health hazards associated with the following terms:  <b>(a)</b> Alpha, beta, gamma, and neutron radiation <b>(b)</b> Asphyxiant <b>(c)</b> Carcinogen <b>(d)</b> Convulsant <b>(e)</b> Corrosive <b>(f)</b> Highly toxic <b>(g)</b> Irritant <b>(h)</b> Sensitizer, allergen <b>(i)</b> Target organ effects <b>(j)</b> Toxic	Chapter 2  <b>(a)</b> Chapter 2 <b>(b)</b> Chapter 2 <b>(c)</b> Chapter 2 <b>(d)</b> Chapter 2 <b>(e)</b> Chapter 2 <b>(f)</b> Chapter 2 and 9 <b>(g)</b> Chapter 2 <b>(h)</b> Chapter 2 <b>(i)</b> Chapter 2 <b>(j)</b> Chapter 2 and 9	Pages 58-88  Pages: <b>(a)</b> 68-69 <b>(b)</b> 70 <b>(c)</b> 82-84 <b>(d)</b> 70-71, 81 <b>(e)</b> 70-71, 81-82 <b>(f)</b> 73-81, 475-476 <b>(g)</b> 70-71, 81 <b>(h)</b> 70-71, 84-85 <b>(i)</b> 74 <b>(j)</b> 73-81, 475-476
<b>5.2.3(9)</b> Given the following, identify the corresponding UN/DOT hazard class and division:  <b>(a)</b> Blood agents <b>(b)</b> Biological agents and biological toxins <b>(c)</b> Choking agents <b>(d)</b> Irritants (riot control agents) <b>(e)</b> Nerve agents <b>(f)</b> Radiological materials <b>(g)</b> Vesicants (blister agents)	Chapter 9  <b>(a-g)</b> Chapter 9	Pages 447-496  Pages: <b>(a)</b> 464-470 <b>(b)</b> 449-454 <b>(c)</b> 470-473 <b>(d)</b> 473-475 <b>(e)</b> 460-463 <b>(f)</b> 454-457 <b>(g)</b> 463-464

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<b>5.2.4 Estimating Potential Harm.</b> Given scenarios involving hazardous materials/WMD incidents, the operations level responder shall estimate the potential harm within the endangered area at each incident and shall meet the following requirements:	Chapter 4	255, 266
<b>5.2.4(1)</b> Identify a resource for determining the size of an endangered area of a hazardous materials/WMD incident.	Chapter 3	Pages 214-215
<b>5.2.4(2)</b> Given the dimensions of the endangered area and the surrounding conditions at a hazardous materials/WMD incident, estimate the number and type of exposures within that endangered area.	Chapter 5	Pages 288-290
<b>5.2.4(3)</b> Identify resources available for determining the concentrations of a released hazardous material/WMD within an endangered area.	Chapter 3	Pages 219-221
<b>5.2.4(4)</b> Given the concentrations of the released material, identify the factors for determining the extent of physical, health, and safety hazards within the endangered area of a hazardous materials/WMD incident.	Chapter 4	Pages 249-266
<b>5.2.4(5)</b> Describe the impact that time, distance, and shielding have on exposure to radioactive materials specific to the expected dose rate.	Chapter 2	Pages 69-70
<b>5.3.1 Describing Response Objectives.</b> Given at least two scenarios involving hazardous materials/WMD incidents, the operations level responder shall describe the response objectives for each example and shall meet the following requirements:	Chapter 5	Pages 279, 288-290
<b>5.3.1(1)</b> Given an analysis of a hazardous materials/WMD incident and the exposures, determine the number of exposures that could be saved with the resources provided by the AHJ.	Chapter 5	Pages 288-290
<b>5.3.1(2)</b> Given an analysis of a hazardous materials/WMD incident, describe the steps for determining response objectives.	Chapter 4	Pages 266-272

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<b>5.3.1(3)</b> Describe how to assess the risk to a responder for each hazard class in rescuing injured persons at a hazardous materials/WMD incident.	Chapter 5	Pages 286-288
<b>5.3.1(4)</b> Assess the potential for secondary attacks and devices at criminal or terrorist events.	Chapter 9	Pages 497-498
<b>5.3.2 Identifying Action Options.</b> Given examples of hazardous materials/WMD incidents (facility and transportation), the operations level responder shall identify the options for each response objective and shall meet the following requirements:	Chapter 5	Pages 279
<b>5.3.2(1)</b> Identify the options to accomplish a given response objective.	Chapter 4	Pages 266-273
<b>5.3.2(2)</b> Describe the prioritization of emergency medical care and removal of victims from the hazard area relative to exposure and contamination concerns.	Chapter 5 and 7	Pages 286, 374-390
<b>5.3.3 Determining Suitability of Personal Protective Equipment.</b> Given examples of hazardous materials/WMD incidents, including the name of the hazardous material/WMD involved and the anticipated type of exposure, the operations level responder shall determine whether available personal protective equipment is applicable to performing assigned tasks and shall meet the following requirements:	Chapter 6	Pages 326-333, 348-354
<b>5.3.3(1)</b> Identify the respiratory protection required for a given response option and the following:	Chapter 6	Pages 334-343

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<p><b>(a)</b> Describe the advantages, limitations, uses, and operational components of the following types of respiratory protection at hazardous materials/WMD incidents:</p> <ul style="list-style-type: none"><li>i. Positive pressure self-contained breathing apparatus (SCBA)</li><li>ii. Positive pressure air-line respirator with required escape unit</li><li>iii. Closed-circuit SCBA</li><li>iv. Powered air-purifying respirator (PAPR)</li><li>v. Air-purifying respirator (APR)</li><li>vi. Particulate respirator</li></ul>	<p>(a) Chapter 6</p>          <p>(i-vi) Chapter 6</p>	<p>Pages (a) 341-342</p>          <p>(i) 335 (ii) 335-337 (iii) 335 (iv) 340 (v) 337-340 (vi) 338-339</p>
<p><b>(b)</b> Identify the required physical capabilities and limitations of personnel working in respiratory protection.</p>	<p>(b) Chapter 6</p>	<p>Pages 340-342</p>
<p><b>5.3.3(2)</b> Identify the personal protective clothing required for a given option and the following:</p>	<p>Chapter 6</p>	<p>Pages 326-343</p>
<p><b>(a)</b> Identify skin contact hazards encountered at hazardous materials/WMD incidents.</p>	<p>Chapter 6</p>	<p>(a) Pages 326-333</p>
<p><b>(b)</b> Identify the purpose, advantages, and limitations of the following types of protective clothing at hazardous materials/WMD incidents:</p> <ul style="list-style-type: none"><li>i. Chemical-protective clothing: liquid splash-protective clothing and vapor-protective clothing</li><li>ii. High temperature-protective clothing: proximity suit and entry suits</li><li>iii. Structural fire-fighting protective clothing</li></ul>	<p>(b) Chapter 6</p>          <p>(i-iii) Chapter 6</p>	<p>Pages 326-333</p>          <p>Pages: (i) 331-333 (ii) 328 (iii) 327-328</p>
<p><b>5.3.4</b> Identifying Decontamination Issues. Given scenarios involving hazardous materials/WMD incidents, operations level responders shall identify when emergency decontamination is needed and shall meet the following requirements:</p>	<p>Chapter 7</p>	<p>Pages 371-393</p>

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<b>5.3.4(1)</b> Identify ways that people, personal protective equipment, apparatus, tools, and equipment become contaminated.	Chapter 7	Pages 371-374
<b>5.3.4(2)</b> Describe how the potential for secondary contamination determines the need for decontamination.	Chapter 7	Pages 373
<b>5.3.4(3)</b> Explain the importance and limitations of decontamination procedures at hazardous materials incidents.	Chapter 7	Pages 374-379
<b>5.3.4(4)</b> Identify the purpose of emergency decontamination procedures at hazardous materials incidents.	Chapter 7	Pages 379-380
<b>5.3.4(5)</b> Identify the factors that should be considered in emergency decontamination.	Chapter 7	Pages 379-380
<b>5.3.4(6)</b> Identify the advantages and limitations of emergency decontamination procedures.	Chapter 7	Page 380
<b>5.4.1</b> Establishing and Enforcing Scene Control Procedures. Given two scenarios involving hazardous materials/WMD incidents, the operations level responder shall identify how to establish and enforce scene control, including control zones and emergency decontamination, and communications between responders and to the public and shall meet the following requirements:	Chapter 5	Pages 279-284
<b>5.4.1(1)</b> Identify the procedures for establishing scene control through control zones.	Chapter 5	Pages 280-284
<b>5.4.1(2)</b> Identify the criteria for determining the locations of the control zones at hazardous materials/WMD incidents.	Chapter 5	Pages 280-284
<b>5.4.1(3)</b> Identify the basic techniques for the following protective actions at hazardous materials/WMD incidents: <b>(a)</b> Evacuation <b>(b)</b> Sheltering-in-place	Chapter 5  (a-b) Chapter 5	Page 290  Pages: (a) 290 (b) 290-291
<b>5.4.1(4)</b> Demonstrate the ability to perform emergency decontamination.	Chapter 5	Pages 379-380

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<b>5.4.1(5)</b> Identify the items to be considered in a safety briefing prior to allowing personnel to work at the following: <b>(a)</b> Hazardous material incidents <b>(b)</b> Hazardous materials/WMD incidents involving criminal activities	Chapter 4  (a-b) Chapter 4	Pages 234-235  Pages (a) 234-235 (b) 234-235
<b>5.4.1(6)</b> Identify the procedures for ensuring coordinated communication between responders and to the public.	Chapters 4 and 5	Pages 241-244, 285
<b>5.4.2 Preserving Evidence.</b> Given two scenarios involving hazardous materials/WMD incidents, the operations level responder shall describe the process to preserve evidence as listed in the emergency response plan and/or standard operating procedures.	Chapter 9	Pages 498-500
<b>5.4.3</b> Initiating the Incident Command System. Given scenarios involving hazardous materials/WMD incidents, the operations level responder shall initiate the incident command system specified in the emergency response plan and/or standard operating procedures and shall meet the following requirements:	Chapter 4	Pages 228-240
<b>5.4.3(1)</b> Identify the role of the operations level responder during hazardous materials/WMD incidents as specified in the emergency response plan and/or standard operating procedures.	Chapter 4	240-241
<b>5.4.3(2)</b> Identify the levels of hazardous materials/WMD incidents as defined in the emergency response plan.	Chapter 4	244-247
<b>5.4.3(3)</b> Identify the purpose, need, benefits, and elements of the incident command system for hazardous materials/WMD incidents.	Chapter 4	228-240
<b>5.4.3(4)</b> Identify the duties and responsibilities of the following functions within the incident management system:  <b>(a)</b> Incident safety officer <b>(b)</b> Hazardous materials branch or group	Chapter 4	Pages: (a) 234-235 (b) 239-240

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<b>5.4.3(5)</b> Identify the considerations for determining the location of the incident command post for a hazardous materials/WMD incident.	Chapter 4	Page 235
<b>5.4.3(6)</b> Identify the procedures for requesting additional resources at a hazardous materials/WMD incident.	Chapter 4	Pages 241-244
<b>5.4.3(7)</b> Describe the role and response objectives of other agencies that respond to hazardous materials/WMD incidents.	Chapter 4	Pages 238-239
<b>5.4.4</b> Using Personal Protective Equipment. The operations level responder shall describe considerations for the use of personal protective equipment provided by the AHJ, and shall meet the following requirements:	Chapter 6	Pages 328-366
<b>5.4.4(1)</b> Identify the importance of the buddy system.	Chapter 4	Page 247
<b>5.4.4(2)</b> Identify the importance of the backup personnel.	Chapter 4	Page 247
<b>5.4.4(3)</b> Identify the safety precautions to be observed when approaching and working at hazardous materials/WMD incidents.	Chapters 3 and 4	Pages 113, 252, 272
<b>5.4.4(4)</b> Identify the signs and symptoms of heat and cold stress and procedures for their control.	Chapter 6	Pages 362-366
<b>5.4.4(5)</b> Identify the capabilities and limitations of personnel working in the personal protective equipment provided by the AHJ.	Chapter 6	Pages 340-342
<b>5.4.4(6)</b> Identify the procedures for cleaning, disinfecting, and inspecting personal protective equipment provided by the AHJ.	Chapter 6	Pages 354-359
<b>5.4.4(7)</b> Describe the maintenance, testing, inspection, and storage procedures for personal protective equipment provided by the AHJ according to the manufacturer's specifications and recommendations.	Chapter 6	Pages 359-362

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<b>5.5.1 Evaluating the Status of Planned Response.</b> Given two scenarios involving hazardous materials/WMD incidents, including the incident action plan, the operations level responder shall evaluate the status of the actions taken in accomplishing the response objectives and shall meet the following requirements:	Chapter 4	Page 273
<b>5.5.1(1)</b> Identify the considerations for evaluating whether actions taken were effective in accomplishing the objectives.	Chapter 4	Page 273
<b>5.5.1(2)</b> Describe the circumstances under which it would be prudent to withdraw from a hazardous materials/WMD incident.	Chapter 4	Pages 268-269
<b>5.5.2 Communicating the Status of the Planned Response.</b> Given two scenarios involving hazardous materials/WMD incidents, including the incident action plan, the operations level responder shall communicate the status of the planned response through the normal chain of command and shall meet the following requirements:	Chapter 4	Pages 241-244
<b>5.5.2(1)</b> Identify the methods for communicating the status of the planned response through the normal chain of command.	Chapter 4	Pages 241-244
<b>5.5.2(2)</b> Identify the methods for immediate notification of the incident commander and other response personnel about critical emergency conditions at the incident.	Chapter 4	Pages 241-244
<b>6.2.3.1 Selecting Personal Protective Equipment.</b> Given scenarios involving hazardous materials/WMD incidents with known and unknown hazardous materials/WMD, the operations level responder assigned to use personal protective equipment shall select the personal protective equipment required to support mission-specific tasks at hazardous materials/WMD incidents based on local procedures and shall meet the following requirements:	Chapter 6	Pages 325-327

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<b>6.2.3.1(1)</b> Describe the types of protective clothing and equipment that are available for response based on NFPA standards and how these items relate to EPA levels of protection.	Chapter 6	Pages 326-333
<b>6.2.3.1(2)</b> Describe personal protective equipment options for the following hazards:  <b>(a)</b> Thermal <b>(b)</b> Radiological <b>(c)</b> Asphyxiating <b>(d)</b> Chemical <b>(e)</b> Etiological/biological <b>(f)</b> Mechanical	Chapters: <b>(a)</b> Chapters 2 and 6 <b>(b)</b> Chapters 2 and 9 <b>(c)</b> Chapters 2 and 6 <b>(d)</b> Chapters 2 and 6 <b>(e)</b> Chapter 6 <b>(f)</b> Chapter 2 and 9	Pages: <b>(a)</b> 61-62, 327-328 <b>(b)</b> 69, 501-503 <b>(c)</b> 70, 345 <b>(d)</b> 70-71, 328-333 <b>(e)</b> 346-347 <b>(f)</b> 86-87, 506-507
<b>6.2.3.1(3)</b> Select personal protective equipment for mission-specific tasks at hazardous materials/WMD incidents based on local procedures.	Chapter 6	Pages 348-349, 352-354
<b>(a)</b> Describe the following terms and explain their impact and significance on the selection of chemical-protective clothing:  i. Degradation ii. Penetration iii. Permeation	<b>(i)</b> Chapter 6 <b>(ii)</b> Chapter 6 <b>(iii)</b> Chapter 6	Pages: <b>(i)</b> 330 <b>(ii)</b> 330 <b>(iii)</b> 329-330
<b>(b)</b> Identify at least three indications of material degradation of chemical-protective clothing.	Chapter 6	Page 330
<b>(c)</b> Identify the different designs of vapor-protective and splash-protective clothing and describe the advantages and disadvantages of each type.	Chapter 6	Pages 328-333

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<b>(d)</b> Identify the relative advantages and disadvantages of the following heat exchange units used for the cooling of personnel operating in personal protective equipment: i. Air cooled ii. Ice cooled iii. Water cooled iv. Phase change cooling technology		NFPA 472 Competencies
<b>(e)</b> Identify the physiological and psychological stresses that can affect users of personal protective equipment.	Chapter 6	Pages 340-342, 362-366
<b>(f)</b> Describe local procedures for going through the technical decontamination process.	Chapter 6	Pages 380-383
<b>6.6.1.1.1</b> The operations level responder assigned to perform product control shall be that person, competent at the operations level, who is assigned to implement product control measures at hazardous materials/WMD incidents.	Chapter 1	Pages 13-17
<b>6.6.1.1.2</b> The operations level responder assigned to perform product control at hazardous materials/WMD incidents shall be trained to meet all competencies at the awareness level (Chapter 4), all core competencies at the operations level (Chapter 5), all mission-specific competencies for personal protective equipment (Section 6.2), and all competencies in this section.	Chapter 1	Pages 13-17
<b>6.6.1.1.3</b> The operations level responder assigned to perform product control at hazardous materials/WMD incidents shall operate under the guidance of a hazardous materials technician, an allied professional, or standard operating procedures.	Chapter 4	Pages 239-240
<b>6.6.1.1.4</b> The operations level responder assigned to perform product control at hazardous materials/WMD incidents shall receive the additional training necessary to meet specific needs of the jurisdiction.	Chapter 1	Pages 13-17

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<b>6.6.1.2.1</b> The goal of the competencies in this section shall be to provide the operations level responder assigned to product control at hazardous materials/WMD incidents with the knowledge and skills to perform the tasks in 6.6.1.2.2 safely and effectively.		
<b>6.6.1.2.2</b> When responding to hazardous materials/WMD incidents, the operations level responder assigned to perform product control shall be able to perform the following tasks:		
<b>6.6.1.2.2(1)</b> Plan an initial response within the capabilities and competencies of available personnel, personal protective equipment, and control equipment and in accordance with the emergency response plan or standard operating procedures by completing the following tasks:  <b>(a)</b> Describe the control options available to the operations level responder. <b>(b)</b> Describe the control options available for flammable liquid and flammable gas incidents.	Chapter 4  Chapters (a) Chapters 4, 5, & 8 (b) Chapter 8	Pages 227-228, 244-247, 252-273  Pages: (a) 268-270, 291-314, 416-436 (b) 400-416
<b>6.6.1.2.2(2)</b> Implement the planned response to a hazardous materials/WMD incident.	Chapter 4	Pages 272-273
<b>6.6.3.1 Identifying Control Options.</b> Given examples of hazardous materials/WMD incidents, the operations level responder assigned to perform product control shall identify the options for each response objective and shall meet the following requirements as prescribed by the AHJ:	Chapter 4	Pages 268-271
<b>6.6.3.1(1)</b> Identify the options to accomplish a given response objective.	Chapter 5	291-314

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Identify the purpose for and the procedures, equipment, and safety precautions associated with each of the following control techniques:  (a) Absorption (b) Adsorption (c) Damming (d) Diking (e) Dilution (f) Diversion (g) Remote valve shutoff (h) Retention (i) Vapor dispersion (j) Vapor suppression	Chapter 5 for all	Pages: (a) 293 (b) 293-294 (c) 294 (d) 294 (e) 299 (f) 294 (g) 300-301 (h) 294 (i) 298 (j) 295-297
<b>6.6.3.2 Selecting Personal Protective Equipment.</b> The operations level responder assigned to perform product control shall select the personal protective equipment required to support product control at hazardous materials/WMD incidents based on local procedures (see Section 6.2).		
<b>6.6.4.1 Performing Control Options.</b> Given an incident action plan for a hazardous materials/WMD incident, within the capabilities and equipment provided by the AHJ, the operations level responder assigned to perform product control shall demonstrate control functions set out in the plan and shall meet the following requirements as prescribed by the AHJ:		
<b>6.6.4.1(1)</b> Using the type of special purpose or hazard suppressing foams or agents and foam equipment furnished by the AHJ, demonstrate the application of the foam(s) or agent(s) on a spill or fire involving hazardous materials/WMD.	Chapter 5	Pages 306-314

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<b>6.6.4.1(2)</b> Identify the characteristics and applicability of the following Class B foams if supplied by the AHJ:  (a) Aqueous film-forming foam (AFFF) (b) Alcohol-resistant concentrates (c) Fluoroprotein (d) High-expansion foam	Chapter 5 for all	Pages: (a) 310-311 (b) 311-312 (c) 309-310 (d) 312
<b>6.6.4.1(2)</b> Given the required tools and equipment, demonstrate how to perform the following control activities:  (a) Absorption (b) Adsorption (c) Damming (d) Diking (e) Dilution (f) Diversion (g) Retention (h) Remote valve shutoff (i) Vapor dispersion (j) Vapor suppression	Chapter 5 for all	Pages: (a) 293 (b) 293-294 (c) 294 (d) 294 (e) 299 (f) 294 (g) 300-301 (h) 294 (i) 298 (j) 295-297
<b>6.6.4.1(4)</b> Identify the location and describe the use of emergency remote shutoff devices on MC/DOT-306/406, MC/DOT-307/407, and MC-331 cargo tanks containing flammable liquids or gases.	Chapters 3 and 5	Pages 124-134, 300-302
<b>6.6.4.1(5)</b> Describe the use of emergency remote shutoff devices at fixed facilities.	Chapter 5	380-383
<b>6.6.4.2</b> The operations level responder assigned to perform product control shall describe local procedures for going through the technical decontamination process.	Chapter 7	380-383

# APPENDIX

## **SAMPLES OF QUESTIONS USED IN THE WRITTEN EXAMINATION ELEMENT**

### **RESCUE OPERATIONS**

1. At a vehicle accident, stabilizing the vehicle with cribbing should be done?
  - A. Only if air bags are used.
  - B. Only if the vehicle is on its side.
  - C. If there is imminent danger of fire.
  - D. In order to prevent harm to the victim and rescuers.
  - E. None of the above.

### **RESCUE OPERATIONS**

2. Which of the following is NOT a source of power for pneumatic tools?
  - A. Air compressor.
  - B. SCBA cylinder.
  - C. Oxygen tanks
  - D. Portable cascade systems.

### **GENERAL KNOWLEDGE REQUIREMENTS**

3. A concept of the incident command system that describes the number of units (persons, functions, etc.) that one individual is able to manage effectively at one time is known as:
  - A. Unity of command.
  - B. Functional responsibility.
  - C. Span of control.
  - D. Modular expansion.

### **PREVENTION PREPAREDNESS AND MAINTENANCE**

4. Pre-incident planning does NOT include:
  - A. Gathering information about the facility.
  - B. Issuing citations for code violations.
  - C. Developing procedures for emergency responders.
  - D. Maintaining information resource systems.

### **PREVENTION PREPAREDNESS AND MAINTENANCE**

5. Which of the following statements is incorrect?
  - A. Bleeding the air out of hose is important only for testing large diameter hose.
  - B. A hose test gate valve will prevent water from surging if a line bursts.
  - C. Hoses should be thoroughly inspected prior to pressure testing.
  - D. Personnel should wear protective equipment in the hose testing area.

## **HAZARDOUS MATERIALS – AWARENESS**

6. A reference book intended to be carried in every emergency vehicle in the United States is the:
- A. IFSTA First Responder Manual
  - B. NIOSH Handbook of Hazardous Materials
  - C. Emergency Response Guidebook
  - D. NFPA Fire Protection Handbook

## **HAZARDOUS MATERIALS – OPERATIONS**

7. The purpose of vapor suppression is to:
- A. Stop the further release of a material from its container.
  - B. Direct or influence the course of airborne hazardous materials.
  - C. Control the flow of a hazmat spill.
  - D. Reduce the emission of vapors.

### SUMMARY OF PRACTICAL SKILLS TEST STATIONS

#### Fireground Operations

#### **Test # 1 Coordinate a Team Interior Structural Fire Attack** **Team Test**

- Test # 1a – Basement Level Fire
- Test # 1b – Grade Level Fire
- Test # 1c – Upper Level Fire
- Test # 1d – Attic Area Fire

#### **TEST # 2 Investigation and Incident Report Tasks** **Individual Test**

- Part 2.1 - Cause and Origin based on Test #1
- Part 2.2 - Protection of Evidence based on Test #1
- Part 2.3 - Incident Reports Information based on Test #1

#### **TEST #3 Ignitable Liquid or Flammable Gas Fires** **Team Test**

- Test # 3a – Extinguish an Ignitable Liquid Fire
- Test # 3b – Control a Flammable Gas Cylinder Fire

#### Rescue Operations

#### **TEST # 4 Rescue/Extrication** **Team Test**

- Perform Scene Size-up, Perform assigned radio reports to dispatch.
- Direct team actions to protect the patient.
- Direct team actions to stabilize the vehicle.

- 4a Remove windows and windshields
- 4b Flap the roof
- 4c Remove the roof
- 4d Remove a door
- 4e Dash push or displacement

#### Prevention, Preparedness, and Maintenance

#### **TEST #5 Portfolio of Fire Prevention Assignments** **Individual Test**

- Part 5.1 Home safety survey
- Part 5.2 Fire safety presentation
- Part 5.3 Pre-incident survey

#### **TEST #6 Maintenance or Power Equipment**

- Test # 6a – Maintain Power Equipment **Individual Test**
- Test # 6b – Perform Annual Hose Service Test **Team Test**

#### **TEST #7 - HAZARDOUS MATERIALS OPERATIONS LEVEL RESPONSE**–Team or Individual

- Test #7 Part 1 – DOT ERG
- Test #7 Part 2 – Decon Operations Test time 15 min.
- Test #7 Part 3 – Protective Actions Total station time 15 min.

Candidates are responsible for providing proper functional PPE and SCBA.

## 2008 NFPA® 472 Competencies

### 5.2.1.1.5 (5) Dewar flask (cryogenic liquids)

There are different designs of Dewar flasks, but all are vessels used to keep liquids at temperatures differing from that of the surrounding air. A Dewar flask consists of a double-walled flask, with the space between the two walls exhausted to a very high vacuum, to minimize transfer of heat by convection and conduction. The inner surfaces of the walls are silvered to reduce transfer of heat by radiation; areas of contact between the two walls are kept at a minimum to keep down conduction of heat. A simple thermos is an example of a Dewar flask.

### 5.2.1.1.6 (5) Type C

Type C radiological containers are not currently in use. They are theoretically designed for air transport.

### 5.2.3(1)(a)vii. Particle size

Particle size plays a role in the behavior of solid materials. Smaller particles tend to stay airborne for longer periods of time (for example, asbestos), while larger particles settle more quickly. Also, larger particles are more easily filtered by respiratory protection such as particle masks.

### 5.2.3(1)(a)viii. Persistence

The persistence of a chemical is its ability to remain in the environment. Chemicals that remain in the environment for a long time are more persistent than chemicals that quickly dissipate or break down. For example, persistent nerve agents will remain effective at their point of dispersion for a much longer time than nonpersistent nerve agents.

**Persistence** — Length of time a chemical agent remains effective without dispersing.

### 5.2.3(8)(i) Target organ effects

HMFR Table 2.6, pg 74 provides examples of toxins and their target organs.

6.2.3.1(3)(d)

i. *Air cooled*

ii. *Ice cooled*

iii. *Water cooled*

iv. *Phase change cooling technology*

- **Air cooling** — Wear long cotton undergarments or similar types of clothing to provide natural body ventilation. Once PPE has been removed, blowing air can help to evaporate sweat, thereby cooling the skin. Wind, fans, blowers, and misters can provide air movement. However, when ambient air temperatures and humidity are high, air movement may provide only limited benefit. Also, air cooling is of little use when actually wearing CPC.
- **Ice cooling** — Use ice to cool the body; however care must be taken not to damage skin with direct contact with ice, as well as to not cool off an individual too quickly. Ice will also melt relatively quickly. Ice cooling vests are available.
- **Water cooling** — Use water to cool the body. When water (including sweat) evaporates from skin, it cools. Provide mobile showers and misting facilities or evaporative cooling vests. Water cooling becomes less effective as air humidity increases and water temperatures rise.
- **Cooling vests** —Wear cooling vests beneath PPE. Cooling vest technologies may use ice, evaporation, gels, or phase change cooling technology. Unlike the lower temperatures provided by ice or gel vests, phase change cooling technology vests interact with body heat to maintain the garment at a consistent temperature of 59°F (15°C). **Note:** Use of cooling vests is being reviewed in Canada and the U.S. due to various health concerns, and several haz mat teams have disallowed them.

### **Practical Skills Test Sites**

Entities approved as examination sites, based upon their satisfaction of facility and equipment requirements, are listed below in chronological order (by approval date):

- Waukesha County Technical College (WCTC), 1995
- Western Technical College (WTC), 2004
- Fox Valley Technical College (FVTC), 1995
- Madison Area Technical College (MATC-Mad), 1995
- Gateway Technical College (GTC), 1995
- Milwaukee Area Technical College (MATC-Milw), 1995
- Milwaukee Fire Department Bureau of Instruction and Training (MFD-BIT), 1995
- Northeast Wisconsin Technical College (NWTC), 1996
- Blackhawk Technical College (BTC), 1997
- Chippewa Valley Technical College (CVTC), 1999
- Lakeshore Technical College (LTC), 2000
- Nicolet Area Technical College (NATC), 2001
- Northcentral Technical College (NTC), 2007

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