

Chapter 10 Test

Name: _____ Date: _____

Directions: Write the correct letter on the blank before each question.

Objective 1:

Explain the application of hazardous materials regulations.

- _____ 1. The burden of reporting the storage and use of hazardous materials rests with: (380)
- A. the business.
 - B. manufacturers.
 - C. fire inspectors.
 - D. the fire department.
- _____ 2. Who is responsible for explaining the site's emergency response procedures and has access to the facility's safety data sheets? (380)
- A. Fire inspector
 - B. Property owner
 - C. Facility legal counsel
 - D. Fire department liaison
- _____ 3. When it comes to product containment, what is one of the greater problems inspectors will find? (381)
- A. The improper labeling of products
 - B. The lack of security of the products
 - C. The training requirements for personnel
 - D. The design and construction of storage tanks

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- _____ 4. Who evaluates used storage equipment before it can be used again safely? (381)
- A. Liaison
 - B. Fire inspector
 - C. Property owner
 - D. Design professional
- _____ 5. Which storage component can be designed so a container safely vents under controlled fire exposure? (382)
- A. Pressure drum
 - B. Pressure relief
 - C. Pressure monitor
 - D. Pressure cylinders
- _____ 6. What does an inspector rely on to determine if sprinkler discharge density and design area are correct for the stored materials? (382)
- A. Locally adopted fire codes
 - B. Sprinkler manufacturer specifications
 - C. State/federal laws specific to given classes of hazardous materials
 - D. A particular NFPA® standard for a given class of hazardous materials
- _____ 7. Which of the following activities or processes that involve hazardous materials may be exempt from regulation? (382)
- A. Pyrophorics
 - B. Cryogenic fluids
 - C. Explosives and blasting agents
 - D. Pesticides, fungicides, and rodenticides
- _____ 8. Which organization regulates hazardous material transportation and its pipeline in the U.S.? (383)
- A. Department of Commerce (DOC)
 - B. Department of the Interior (DOI)
 - C. Department of Transportation (DOT)
 - D. Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF)

- _____ 9. To accomplish a code's intent regarding hazardous materials storage, use, and handling, fire inspectors must become familiar with the applicable standards and: (383)
- A. state laws.
 - B. DOT regulations.
 - C. the jurisdiction's adopted codes.
 - D. the storage facility emergency management plan.

Objective 2:**Identify some of the applicable codes and standards that apply to hazardous materials.**

- _____ 10. What organization has codes or standards that apply to hazardous materials and include the International Fire Code and International Building Code? (384)
- A. UL
 - B. ICC
 - C. ASTM
 - D. NFPA®
- _____ 11. What organization has codes or standards that apply to hazardous materials and includes *Boiler and Pressure Vessel Code, Section VIII, Division 1 and 2*? (384)
- A. UL
 - B. ICC
 - C. ASME
 - D. NFPA®

Objective 3:**Explain the classification system used for hazardous materials.**

- _____ 12. Hazardous materials classifications are based on criteria in: (385)
- A. state laws.
 - B. the adopted fire code.
 - C. manufacturer standards.
 - D. the facility emergency management plan.

- _____ 13. What is one information source an inspector can use to verify proper chemical classification? (385)
- A. Site manager
 - B. Property owner
 - C. Certificate of Occupancy
 - D. Certificate of Residency
- _____ 14. Which resource available to assist inspectors in determining classifications is a free internet-based search engine and a compilation of a number of databases developed by several U.S. agencies? (386)
- A. NFPA® 400
 - B. Appendix E in the IFC
 - C. Hazardous Materials Expert Assistant
 - D. Wireless Information System for Emergency Responders
- _____ 15. Which resource available to assist inspectors in determining classifications contains about 8,000 hazardous materials and compounds? (386)
- A. NFPA® 400
 - B. Appendix E in the IFC
 - C. Hazardous Materials Expert Assistant
 - D. Wireless Information System for Emergency Responders
- _____ 16. Which resource available to assist inspectors in determining classifications features guidance on the steps to take to evaluate the hazards of a material? (386)
- A. NFPA® 400
 - B. Appendix E in the IFC
 - C. Hazardous Materials Expert Assistant
 - D. Wireless Information System for Emergency Responders

Objective 4:
Describe the classification and properties of physical hazard materials.

- _____ 17. How many classes of physical hazard materials are there? (386)
- A. Ten
 - B. Twenty
 - C. Fifty
 - D. Seventy-five
- _____ 18. What is the most common class of hazardous material that inspectors will encounter? (386)
- A. Organic peroxides
 - B. Water-reactive materials
 - C. Explosives and blasting agents
 - D. Flammable and combustible liquids
- _____ 19. A liquid is classified as either flammable or combustible when it contains: (386)
- A. carbon and nitrogen.
 - B. carbon and hydrogen.
 - C. nitrogen and phosphorus.
 - D. hydrogen and phosphorus.
- _____ 20. Gases that do not liquefy at normal temperature and pressure are: (388)
- A. dissolved gases.
 - B. liquefied compressed gases.
 - C. nonliquefied compressed gases.
 - D. nondissolved compressed gases.
- _____ 21. Which gases become liquids at ordinary temperatures and pressures? (388)
- A. Dissolved gases
 - B. Liquefied compressed gases
 - C. Nonliquefied compressed gases
 - D. Nondissolved compressed gases

- _____ 22. Which of the following is a hazard associated with cryogenic liquids? (389)
- A. Low liquid-to-vapor ratio
 - B. Extremely low temperatures
 - C. Extremely high temperatures
 - D. Nondissolved compressed gases
- _____ 23. Flammable solids have an ignition temperature of: (390)
- A. less than 167°F (75°C).
 - B. more than 167°F (75°C).
 - C. less than 212°F (100°C).
 - D. more than 212°F (100°C).
- _____ 24. Which type of spontaneously combustible material can ignite without external ignition sources within five minutes of coming into contact with air? (391)
- A. Pyrophoric
 - B. Self-heating
 - C. Metal powders
 - D. Cryogenic materials
- _____ 25. What should an inspector consult to determine the appropriate fire extinguishing agent according to the manufacturer's specifications for flammable solids that are metals? (391)
- A. Fire codes
 - B. DOT placards
 - C. Safety Data Sheets
 - D. Manufacturer's labels
- _____ 26. Organic peroxides only exist as solids or: (391)
- A. gases.
 - B. liquids.
 - C. vapors.
 - D. products of combustion.

- _____ 27. What type of materials should always be kept separate from oxidizers because their interaction will be immediate and violent? (392)
- A. Pyrophorics
 - B. Cryogenic fluids
 - C. Water-based materials
 - D. Petroleum-based materials
- _____ 28. A material is classified as pyrophoric when it autoignites in air at temperatures of: (393)
- A. 130°F (55°C) or less.
 - B. 130°F (55°C) or more.
 - C. 250°F (121°C).
 - D. 450°F (232°C).
- _____ 29. What is needed to ignite a pyrophoric material? (393)
- A. Air
 - B. Violent decomposition
 - C. Mixture with flammable liquid
 - D. Exposure to compressed gases
- _____ 30. The loss of which of the following stabilizing chemicals can cause an uncontrollable reaction? (394)
- A. Water
 - B. Helium
 - C. Diluent
 - D. Oxygen
- _____ 31. The manufacturing of plastic can result in which type of physical hazard? (394)
- A. Explosives
 - B. Flammable solids
 - C. Water-reactive materials
 - D. Unstable (reactive) materials

- _____ 32. Which type of materials are capable of producing a sudden, violent expansion of gases that may be accompanied by a shock or pressure wave? (395)
- A. Cryogenics
 - B. Toxic materials
 - C. Incompatible materials
 - D. Explosives and blasting agents

Objective 5:

Explain the classification of health hazard materials.

- _____ 33. Which type of materials are those where a single brief exposure to the hazardous material can result in death, injury, or incapacitation? (396)
- A. Fire hazards
 - B. Health hazards
 - C. Mental hazards
 - D. Physical hazards
- _____ 34. How do toxicity limits in model fire codes compare to the Department of Transportation (DOT) and Transport Canada (TC) regulations? (396)
- A. They are lower
 - B. They are higher
 - C. They are the same
 - D. Some differ; some match
- _____ 35. What value represents the concentration of a given toxic material that the body generally can tolerate without ill effects? (397)
- A. Toxicity level value (TLV)
 - B. Threshold limit value (TLV)
 - C. Toxicity classification levels (TCL)
 - D. Registry of Toxic Effects Values (RTEV)
- _____ 36. Which acute toxicity value refers to the ingested dose of a given substance that was lethal to 50% or more of the test population when they swallowed or ate the substance? (397)
- A. LD₂₅
 - B. LC₂₅
 - C. LD₅₀
 - D. LC₅₀

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- _____ 37. Which acute toxicity value refers to the concentration in the air of a given substance that killed 50 percent or more of the test population? (397)
- A. LD₂₅
 - B. LC₂₅
 - C. LD₅₀
 - D. LC₅₀
- _____ 38. Which of the following is a source for hazardous material toxicity data? (397)
- A. NFPA® 1 *Fire Code*
 - B. Underwriters Laboratories
 - C. American Society of Testing and Materials
 - D. *Sax's Dangerous Properties of Industrial Materials*
- _____ 39. Which health hazard material can exist in all three physical states? (398)
- A. Mixtures
 - B. Corrosives
 - C. Cryogenics
 - D. Water-reactive
- _____ 40. How do corrosive classifications in model fire codes compare to the Department of Transportation (DOT) and Transport Canada (TC) regulations? (398)
- A. They are lower
 - B. They are higher
 - C. They are the same
 - D. Some differ; some match
- _____ 41. Which hazardous materials contain two or more materials that are not chemically combined? (399)
- A. Mixtures
 - B. Corrosives
 - C. Pyrophorics
 - D. Unstable (reactive) materials

- _____ 42. What resource can fire inspectors use to identify incompatible hazardous materials storage? (399)
- A. NFPA® 1 *Fire Code*
 - B. Chemical Compatibility Matrix
 - C. *Sax's Dangerous Properties of Industrial Materials*
 - D. Registry of Toxic Effects of Chemical Substances (RTECS)
- _____ 43. Hazardous materials that are incompatible are considered separated if: (401)
- A. they are properly labeled.
 - B. they are separated by a distance of 20 feet (6 m) or more.
 - C. the materials are separated by a noncombustible bearing wall.
 - D. all of the materials are stored in approved storage cabinets, exhausted enclosures, or gas cabinets 10 feet (3 m) apart.

Objective 6:**Describe the code requirements for the marking of hazardous materials for identification by emergency responders.**

- _____ 44. Which resource is a detailed information bulletin prepared by the manufacturer or importer of a chemical to describe or give information about hazards? (402)
- A. DOT placards
 - B. UN data sheets
 - C. Safety data sheets
 - D. Manufacturer installation packets
- _____ 45. Which transportation placards are required for trucks carrying products that include hazardous materials to travel freely among the U.S., Canada, and Mexico? (402)
- A. UN recommendations
 - B. Department of Transportation (DOT) placards
 - C. Mexican Secretariat for Communications and Transport (SCT) placards
 - D. National Institute for Occupational Safety and Health (NIOSH) recommendations

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- _____ 46. Under the UN system, which classification includes explosives? (404)
- A. Class 1
 - B. Class 4
 - C. Class 6
 - D. Class 9
- _____ 47. Under the UN system, which classification includes poison (toxic) and poison inhalation hazard? (404)
- A. Class 1
 - B. Class 4
 - C. Class 6
 - D. Class 9
- _____ 48. Which corner must display the hazard class or division number on placards corresponding to the primary hazard class of a material? (404)
- A. Left
 - B. Right
 - C. Lower
 - D. Upper
- _____ 49. What kind of unique identifier is assigned to each hazardous material and often displayed on placards, labels, orange panels, and/or white diamonds? (404)
- A. Location-based classifications
 - B. Two-digit identification numbers
 - C. Four-digit identification numbers
 - D. Alphanumeric classification codes
- _____ 50. What resource can be used as a key for the unique identifiers assigned to hazardous materials? (404)
- A. UN Identifier Guide
 - B. *Emergency Response Guidebook (ERG)*
 - C. *Sax's Dangerous Properties of Industrial Materials*
 - D. Registry of Toxic Effects of Chemical Substances (RTECS)

- _____ 51. Which type of identification features diamond-shaped, color-coded signs that shippers provide to identify the materials in transportation containers? (406)
- A. DOT signs
 - B. DOT labels
 - C. DOT placards
 - D. DOT markings
- _____ 52. Which type of identification features printed matter on a 3.9-inch (100 mm), square-on-point diamond that may or may not have written text identifying the hazardous material within the packaging? (408)
- A. DOT signs
 - B. DOT labels
 - C. DOT placards
 - D. DOT markings
- _____ 53. Which type of identification features a descriptive name, identification number, weight, or specification that includes instructions, cautions, or UN marks required on outer packaging containing hazardous materials or goods? (409)
- A. DOT signs
 - B. DOT labels
 - C. DOT placards
 - D. DOT markings
- _____ 54. What standard requires employers to identify hazards in the workplace and train employees how to recognize those hazards? (411)
- A. Military Hazard Identification Standard
 - B. UN's Hazard Communications Standard
 - C. OSHA's Hazard Communications Standard (HCS)
 - D. *Sax's Dangerous Properties of Industrial Materials*
- _____ 55. Which manufacturer warning indicates that a product may present moderate hazards that have significant health effects or flammability? (414)
- A. POISON
 - B. DANGER
 - C. CAUTION
 - D. WARNING

- _____ 56. Where are military markings typically used? (414)
- A. Fixed facilities
 - B. Temporary facilities
 - C. Ammunition storage
 - D. All air transportation
- _____ 57. Markers must be in sufficient numbers along a pipeline to identify the pipe's: (414)
- A. size.
 - B. location.
 - C. purpose.
 - D. capacity.
- _____ 58. Which system provides a widely recognized method for indicating the presence of hazardous materials at commercial, manufacturing, institutional, and other fixed-storage facilities? (416)
- A. NFPA® 704
 - B. UN's Hazard Communications System
 - C. OSHA's Hazard Communications Standard (HCS)
 - D. *Sax's Dangerous Properties of Industrial Materials*
- _____ 59. Which guidebook is primarily a guide to aid emergency responders in quickly identifying the hazards of materials involved in an emergency incident? (418)
- A. *Emergency Response Guidebook* (ERG)
 - B. *NIOSH Pocket Guide to Chemical Hazards* (NPG)
 - C. Hazardous Materials Information Resource System (HMIRS)
 - D. *Hazardous Materials Guide for First Responders* from the U.S. Fire Administration
- _____ 60. Which guidebook is a reference source of general industrial hygiene information? (420)
- A. *Emergency Response Guidebook* (ERG)
 - B. *NIOSH Pocket Guide to Chemical Hazards* (NPG)
 - C. Hazardous Materials Information Resource System (HMIRS)
 - D. *Hazardous Materials Guide for First Responders* from the U.S. Fire Administration

- _____ 61. Which guidebook is the result of a study to determine resources that are available to emergency responders? (421)
- A. *Emergency Response Guidebook* (ERG)
 - B. *NIOSH Pocket Guide to Chemical Hazards* (NPG)
 - C. Hazardous Materials Information Resource System (HMIRS)
 - D. *Hazardous Materials Guide for First Responders* from the U.S. Fire Administration
- _____ 62. What standard in Canada is designed to reduce the risk from hazardous products in the workplace? (422)
- A. Health Canada Standard
 - B. Controlled Product Regulations
 - C. Public Health Agency of Canada Regulations
 - D. Workplace Hazardous Materials Information System (WHMIS)
- _____ 63. Provincial occupational health and safety regulations in Canada typically place the responsibility of safeguarding the health and safety of workers on the: (422)
- A. employers.
 - B. employees.
 - C. local government.
 - D. provincial government.
- _____ 64. Which of the following common Spanish hazard warning terms means "danger"? (429)
- A. Peligro
 - B. Veneno
 - C. Precaucion
 - D. Radioactivo
- _____ 65. Hazardous materials piping labels must identify contents and: (430)
- A. direction of flow.
 - B. hazard classification.
 - C. emergency contacts.
 - D. required pressure level.
- _____ 66. The only way to identify a cylinder's contents is by the: (430)
- A. color of the cylinder.
 - B. capacity of the cylinder.
 - C. size and shape of the cylinder.
 - D. labeling or marking on the cylinder.

Objective 7:**Describe code considerations for determining the permissible amount of hazardous materials within a building.**

- _____ 67. A material in a package that is static and not moving is defined as: (430)
- A. use.
 - B. storage.
 - C. open-system use.
 - D. closed-system use.
- _____ 68. When a hazardous material is moved from its original container, it is considered: (430)
- A. use.
 - B. storage.
 - C. open-system use.
 - D. closed-system use.
- _____ 69. To determine the MAQ, the code official must have the material hazard classification, physical state, and: (431)
- A. the number of people in the area.
 - B. the response time of the fire department.
 - C. the occupancy classification of the facility.
 - D. the amount of material that is in storage and use.
- _____ 70. The number of control areas inside a building and their MAQ is influenced by the building's: (434)
- A. use.
 - B. design.
 - C. location.
 - D. occupancy.

Objective 8:**Explain the requirements for storage and use of nonbulk and bulk packaging.**

- _____ 71. Nonbulk packages containing liquefied compressed gases, cryogenic fluids, or liquids with a high vapor pressure must: (435)
- A. contain a means of venting.
 - B. provide a means of drainage.
 - C. have secondary containment.
 - D. be stored separate from all other hazards.
- _____ 72. Code requirements for containers address packaging of: (435)
- A. organic peroxides.
 - B. explosives and blasting agents.
 - C. flammable and combustible liquids.
 - D. compressed and liquefied compressed gases.
- _____ 73. What type of small container is designed to virtually eliminate vapor release from the container under normal conditions? (436)
- A. Gas cans
 - B. Oil drums
 - C. Safety cans
 - D. Safety cylinders
- _____ 74. What is another name for an intermediate bulk container (IBC)? (437)
- A. Tote
 - B. Drum
 - C. Safety can
 - D. Safety cylinder
- _____ 75. Unless they are disposable, compressed gas containers are subject to periodic testing and: (437)
- A. cleaning.
 - B. replacement.
 - C. maintenance.
 - D. examination.

- _____ 76. Which type of packaging refers to a packaging, other than that on a ship or barge, in which materials are loaded with no intermediate form of containment? (438)
- A. Bulk
 - B. Nonbulk
 - C. Intermediate
 - D. High-density
- _____ 77. UL 142 requires that any shop-fabricated aboveground storage tanks storing flammable or combustible liquids have: (440)
- A. SDS.
 - B. grills.
 - C. DOT placards.
 - D. a permanent nameplate.
- _____ 78. Which type of tanks are fabricated from plate carbon steel and stainless steel? (442)
- A. Fuel storage tanks
 - B. Underground storage tanks
 - C. Field-erected aboveground storage tanks
 - D. Shop-fabricated aboveground storage tanks
- _____ 79. Which type of tanks are designed to operate at atmospheric pressure? (443)
- A. Fuel storage tanks
 - B. Underground storage tanks
 - C. Field-erected aboveground storage tanks
 - D. Shop-fabricated aboveground storage tanks

Objective 9:

Describe the code requirements for testing, maintenance and operation of equipment, containers and tanks.

- _____ 80. IFC and NFPA® 400 requirements for the integrity of tanks and piping include verifying that tank vents are operational and that: (449)
- A. all pressure valves are closed.
 - B. operational costs are reasonable.
 - C. all personnel are properly trained.
 - D. tanks and piping are free of any leaks.

- _____ 81. Tanks with integral secondary containment that cannot be visually monitored require an electronic means of leak detection, which requires periodic: (449)
- A. testing.
 - B. cleaning.
 - C. painting.
 - D. replacement.