Chapter 24 Test

Name: _____ **Date:** _____

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

_____ 1. In Step 2 of the APIE process, responders: (1047) *[1072, 5.3.1]*

A. gather information and attempt to understand the current situation.
B. perform tasks determined in the planning stage and direct actions to mitigate the incident.
C. use the information gathered to determine what actions need to be taken to mitigate the incident.
D. monitor progress to see whether the response plan is working, and continue throughout the incident.

_____ 2. In Step 4 of the APIE process, responders: (1047) *[1072, 5.3.1]*

A. gather information and attempt to understand the current situation.
B. perform tasks determined in the planning stage and direct actions to mitigate the incident.
C. use the information gathered to determine what actions need to be taken to mitigate the incident.
D. monitor progress to see whether the response plan is working, and continue throughout the incident.

_____ 3. Hazardous materials or dangerous goods are: (1048) *[1072, 4.2.1]*

A. not a serious problem.
B. always easy to identify.
C. rarely encountered by firefighters.
D. substances that possess harmful characteristics.

_____ 4. Hazmat incidents often: (1049) *[1072, 4.2.1]*

A. do not pose any threat.
B. involve international news coverage.
C. are less complex than other types of emergency incidents.
D. are more complex than other types of emergency incidents.

_____ 5. Acute health effects are: (1049) *[1072, 4.2.1, 5.3.1, 5.5.1]*

A. lethal but take a long time to show up.
B. long-term effects that may take years to appear.
C. short-term effects that may take years to appear.
D. short-term effects that appear within hours or days.

_____ 6. A chronic exposure to a hazardous material is: (1049) *[1072, 4.2.1, 5.3.1, 5.5.1]*

A. lethal.
B. long-term or reoccurring.
C. unlikely to cause health problems.
D. a single exposure or several repeated exposures within a short time period.

_____ 7. Breathing hazardous materials in through the nose or mouth is defined as: (1050) *[1072, 4.2.1, 5.3.1, 5.5.1]*

A. injection.
B. ingestion.
C. inhalation.
D. absorption.

_____ 8. The process of taking in hazardous materials through the skin or eyes is defined as: (1050) *[1072, 4.2.1, 5.3.1, 5.5.1]*

A. injection.
B. ingestion.
B. inhalation.
D. absorption.

_____ 9. A chemical that burns or destroys living tissue is an example of: (1051) *[1072, 4.2.1, 5.3.1, 5.5.1]*

A. toxicity.
B. corrosivity.
C. energy release.
D. chronic exposure.

_____ 10. Chemicals or biological substances that cause sickness, illness, or injury by doing damage on the molecular scale are an example of: (1051) *[1072, 4.2.1, 5.3.1, 5.5.1]*

A. toxicity.
B. corrosivity.
C. energy release.
D. chronic exposure.

_____ 11. Fires and explosions are examples of: (1052) *[1072, 4.2.1, 5.3.1, 5.5.1]*

A. toxicity.
B. corrosivity.
C. energy release.
D. chronic exposure.

_____ 12. Which statement about gases is most accurate? (1055) *[1072, 5.2.1]*

A. Gases do not present a breathing/inhalation hazard.
B. It is quite easy to contain gases for mitigation purposes.
C. It is easiest and safest to detect gases by sense of smell.
D. Gases have an undefined shape and keep expanding if uncontained.

_____ 13. Which statement BEST describes compressed gas? (1056) *[1072, 5.2.1]*

A. Gas that has expanded upon release and escaped mitigation
B. Confined gas that at normal temperatures exists in both liquid and gaseous states
C. Any gas that is kept at pressures and/or temperatures higher than ambient conditions
D. Gas that, at normal temperature, exists solely as a gas when pressurized in a container

_____ 14. The conversion of a liquid to vapor: (1056) *[1072, 5.2.1]*

A. makes it easier to detect.
B. makes it easier to contain.
C. increases the material's mobility.
D. decreases the material's mobility.

_____ 15. Which statement about solids is most accurate? (1058) *[1072, 5.2.1]*

A. The process of sublimation is rapid and violent.
B. The particle size of solids may influence their behavior.
C. Solids tend to be very mobile unless acted upon by exterior forces.
D. Unlike liquids and vaporous liquids, solids do not have inhalation hazards.

_____ 16. Sublimation occurs when a material transitions directly from a: (1058) *[1072, 5.2.1]*

A. solid to a gas.
B. gas to a solid.
C. gas to a liquid.
D. solid to a liquid.

_____ 17. What is the pressure exerted by a saturated vapor above its own liquid in a closed container? (1059) *[1072, 5.2.1]*

A. Vapor density
B. Specific gravity
C. Vapor pressure
D. Solubility/miscibility

_____ 18. Liquid changes to a gas at the _____ point. (1059) *[1072, 5.2.1]*

A. flash
B. boiling
C. freezing
D. sublimation

_____ 19. A boiling liquid expanding vapor explosion (BLEVE) is caused by: (1060) *[1072, 5.2.1]*

A. sublimation of a boiling liquid.
B. application of a pressure stream.
C. a heated liquid or gas expanding.
D. inadequate internal vessel pressure.

_____ 20. Gases with a vapor density of _____ will rise quickly and spread to a wide geographical area. (1060) *[1072, 5.2.1]*

A. one
B. less than one
C. more than one
D. one through five

_____ 21. Partially water-soluble chemicals will penetrate into the lower respiratory system and cause: (1061) *[1072, 5.2.1]*

A. sudden gastrointestinal distress.
B. itching, scratching, and bloody skin lesions.
C. immediate symptoms such as coughing and throat irritations.
D. delayed symptoms that include pulmonary edema and coughing up blood.

_____ 22. Most flammable liquids will float on water because they have: (1062) *[1072, 5.2.1]*

A. high solubility.
B. high miscibility.
C. specific gravities less than one.
D. specific gravities greater than one.

_____ 23. Viscosity determines the ease with which a product will flow and is greatly affected by: (1062) *[1072, 5.2.1]*

A. sublimation.
B. temperature.
C. specific gravity.
D. appearance and odor.

_____ 24. The concentration (in air) at which the "average person" can smell a particular compound is the: (1063) *[1072, 5.2.1]*

A. solubility.
B. vapor density.
C. odor threshold.
D. vapor pressure.

_____ 25. The temperature at which a liquid or volatile substance gives off enough vapors to support continuous burning is its: (1064) *[1072, 4.2.1, 5.2.1]*

A. fire point.
B. flash point.
C. flammable range.
D. autoignition temperature.

_____ 26. Flammable gases have: (1065) *[1072, 4.2.1, 5.2.1]*

A. no flash point.
B. higher fire points.
C. very low flash points.
D. no autoignition temperature.

_____ 27. The lowest concentration (or lowest percentage of the substance in the air) that will produce a flash of fire when an ignition source is present is the: (1065) *[1072, 4.2.1, 5.2.1]*

A. LLL (lower liability limit).
B. LFL (lower flammable limit).
C. UEL (upper explosive limit).
D. UFL (upper flammable limit).

_____ 28. A fuel that has moved beyond its upper flammable limit will: (1065) *[1072, 4.2.1, 5.2.1]*

A. be too rich to burn.
B. flash if exposed to an ignition source.
C. immediately reach its autoignition temperature.
D. reach the correct ratio of fuel to oxygen to sustain combustion.

_____ 29. What type of materials break down fatty skin tissues and can penetrate deeply into the body? (1066) *[1072, 4.2.1, 5.2.1]*

A. Acids
B. Bases
C. Gases
D. Vapors

_____ 30. The reducing agent in the fire tetrahedron acts as the _____ source for the reaction. (1067) *[1072, 4.2.1, 5.2.1]*

A. fuel
B. oxygen
C. activation
D. autoignition

_____ 31. What will increase the rate of polymerization and decrease the activation energy necessary for further polymerization? (1069) *[1072, 4.2.1, 5.2.1]*

A. Fuel
B. Catalyst
C. Inhibitor
D. Contamination

_____ 32. The most energetic and hazardous forms of radiation are: (1070) *[1072, 4.2.1, 5.2.1]*

A. ionizing.
B. nonionizing.
C. visible light.
D. electromagnetic.

_____ 33. Which type of radiation can be reduced or stopped by a layer of clothing, a thin sheet of metal, or a thick Plexiglass? (1071) *[1072, 4.2.1, 5.2.1]*

A. Alpha
B. Beta
C. Gamma
D. Neutron

_____ 34. Which type of ionizing radiation consists of high-energy photons? (1071) *[1072, 4.2.1, 5.2.1]*

A. Alpha
B. Beta
C. Gamma
D. Neutron

_____ 35. Which statement about radiation is accurate? (1073) *[1072, 4.2.1, 5.2.1]*

A. Exposure to radiation will make a person radioactive.
B. Exposure to any amount of radiation will cause radiation sickness.
C. Radioactive contamination occurs when radiation passes through people or things.
D. Damage is often described in terms of dosage, indicating the amount of energy absorbed by matter.

_____ 36. The damaging effects of ionizing radiation occur at the _____ level. (1073) *[1072, 4.2.1, 5.2.1]*

A. organ
B. cellular
C. external
D. environmental

_____ 37. Asphyxiants, irritants, convulsants, and carcinogens are types of: (1077) *[1072, 4.2.1, 5.2.1]*

A. toxics.
B. radiation.
C. polymers.
D. corrosives.

_____ 38. Which type of biological/etiological hazard spreads mostly through the bite of infected arthropods? (1078) *[1072, 4.2.1, 5.2.1]*

A. Viruses
B. Bacteria
C. Rickettsias
D. Biological toxins

_____ 39. Most diseases are spread via contact with: (1079) *[1072, 4.2.1, 5.2.1]*

A. toxicity.
B. rickettsias.
C. body fluids.
D. radioactive substances.

_____ 40. What is the first step in the sequence proposed by the General Hazardous Materials Behavior Model (GEBMO)? (1080) *[1072, 5.2.1]*

A. Stress
B. Release
C. Exposure
D. Dispersion

_____ 41. A container making noises from expansion or contraction may indicate that the container has been exposed to _____ energy. (1080-1081) *[1072, 4.2.1]*

A. thermal
B. chemical
C. mechanical
D. radiological

_____ 42. Visible corrosion, or other degradation of a container, may indicate that a container is undergoing _____ energy. (1081) *[1072, 4.2.1]*

A. thermal
B. chemical
C. mechanical
D. radiological

_____ 43. Which type of container breach has been documented as causing a BLEVE? (1083) *[1072, 4.2.1]*

A. Puncture
B. Split or tear
C. Runaway cracking
D. Broken attachments

_____ 44. What type of container release is characterized by a fast release of pressurized hazardous material through properly operating safety devices? (1084) *[1072, 4.2.1]*

A. Spill/leak
B. Detonation
C. Rapid relief
D. Violent rupture

_____ 45. What type of dispersion pattern forms an irregularly shaped pattern of an airborne hazardous material where wind and/or topography influence the downrange course from the point of release? (1085) *[1072, 4.2.1]*

A. Cloud
B. Plume
C. Particulate
D. Hemispheric

_____ 46. Computer software programs such as CAMEO and ALOHA can be used to: (1090) *[1072, 4.2.1]*

A. model dispersion patterns.
B. determine the origin of the container.
C. predict ruptures from mechanical stress.
D. make notifications downwind of a container release.

_____ 47. A short-term contact or impingement is one that takes place over: (1090) *[1072, 4.2.1]*

A. milliseconds or seconds.
B. minutes or hours.
C. days, weeks, or months.
D. years or generations.

_____ 48. The three mechanisms of harm in a container hazardous materials incident are: (1091) *[1072, 4.2.1]*

A. energy release, corrosivity, and toxicity.
B. radioactivity, pressure, and temperature.
C. dispersion patterns, rapid release, and detonation.
D. wind speed, barometric pressure, and time of day.

_____ 49. Which method of detecting the presence of hazardous materials would pose the least risk for a first responder? (1091) *[1072, 4.2.1]*

A. Referring to a preincident survey of the facility
B. Obtaining the shipping papers to identify a material
C. Using sense of smell or touch to identify the material
D. Entering the hazard area to use an air monitoring device

_____ 50. Once hazardous materials are detected, first responders should: (1091) *[1072, 4.2.1]*

A. deny exit to all bystanders.
B. get as close as possible to attempt material identification.
C. use a number of resources to identify the materials and potential hazards.
D. do nothing until the Incident Commander and a hazmat technician arrive on the scene.

_____ 51. When hazardous materials are transported through your area,: (1092) *[1072, 4.2.1]*

A. it will be confidential.
B. there will be 24-hour notice.
C. you may have little or no warning.
D. a police escort should be provided.

_____ 52. What are some reasons that preincident surveys might not be accurate or useful in a hazmat incident? (1093) *[1072, 4.2.1]*

A. Your AHJ may not regulate hazardous materials.
B. Preincident surveys are rarely useful in an emergency.
C. Definitions of hazardous materials are in constant flux.
D. Inventories, businesses, or other factors may change without notice.

_____ 53. Locations such as ports, docks, railroad sidings, airplane hangars and truck terminals: (1094) *[1072, 4.2.1]*

A. do not contain hazardous materials.
B. are likely locations for hazmat incidents.
C. are unlikely locations for hazmat incidents.
D. must announce when hazardous materials will be present.

_____ 54. In which type of occupancy are first responders MOST likely to find supplies of anhydrous ammonia? (1096) *[1072, 4.2.1]*

A. Farms
B. Residences
C. Office buildings
D. Health care facilities

_____ 55. Which is considered to be a nonbulk container? (1097) *[1072, 4.2.1, 5.2.1]*

A. Drum
B. Railcar
C. Cargo tank
D. Intermodal container

_____ 56. Pressure containers: (1106) *[1072, 4.2.1, 5.2.1]*

A. do not contain hazardous materials.
B. can be recognized by their two flat ends.
C. are constructed out of very flexible material.
D. have the potential to release a great deal of energy if involved in an incident.

_____ 57. Liquid oxygen (LOX), nitrogen, helium, hydrogen, argon, and liquefied natural gas (LNG) are examples of: (1121) *[1072, 4.2.1, 5.2.1]*

A. cryogens.
B. corrosives.
C. non-hazardous materials.
D. weapons of mass destruction.

_____ 58. Liquid containers tend to have: (1127) *[1072, 4.2.1, 5.2.1]*

A. open tops.
B. pressure gauges.
C. V-shaped sloping sides.
D. flat (or less rounded) ends on tanks.

_____ 59. Small airborne particles of solid substances such as grain, flour, sugar, coal, metal, or sawdust: (1140) *[1072, 4.2.1, 5.2.1]*

A. can ignite or explode.
B. do not present a hazard.
C. may be stored in flexible bladders.
D. have their own hazardous materials placard.

_____ 60. Materials with very little radioactivity that present no risk to the public should be shipped using what type of packaging? (1143) *[1072, 4.2.1, 5.2.1]*

A. Type A
B. Type B
C. Type C
D. Excepted

_____ 61. Which statement about pipelines is MOST accurate? (1146) *[1072, 4.2.1, 5.2.1]*

A. Pipeline markers always mark exact locations.
B. Pipelines will run in a straight line between markers.
C. Markers are rarely the best way to identify that pipelines are present.
D. Pipeline companies must provide markers where pipelines cross under (or over) railroads or waterways.

_____ 62. Statistics on marine vessel oil spills show that most oil spills: (1147) *[1072, 4.2.1, 5.2.1]*

A. are relatively small.
B. are large major spills.
C. occur in the open ocean.
D. are due to animal collisions.

_____ 63. Which marine vessels may serve as floating warehouses with hazardous goods, vehicles, or rail cars inside? (1148) *[1072, 4.2.1, 5.2.1]*

A. Barges
B. Unit loading devices
C. Chemical carrier tankers
D. Towing or pushing vessels

_____ 64. What is a unit loading device? (1149) *[1072, 4.2.1, 5.2.1]*

A. A large railway cargo container
B. A type of marine vessel cargo carrier
C. A mechanized device to automatically load hazardous materials
D. Containers and aircraft pallets used to consolidate air cargo into a single transportable unit

_____ 65. In North America, the U.N.'s *Transportation of Dangerous Goods – Model Regulations* is the basis of: (1151) *[1072, 4.2.1]*

A. container shapes.
B. preincident plans and surveys.
C. first responder responsibilities and limitations.
D. the placarding, labeling, and marking system used to identify hazardous materials during transportation.

_____ 66. In the U.N. system, hazard classes are divided into: (1151) *[1072, 5.2.1]*

A. explosive and nonexplosive.
B. the types of containers they are transported in.
C. fifteen different classes, ranked from safest to most dangerous.
D. nine classes that include gases, infectious substances, and miscellaneous.

_____ 67. In North America, rail tank cars, portable tanks, bulk packages, and certain nonbulk packages must display: (1152) *[1072, 4.2.1]*

A. the U.N. four-digit identification number.
B. a weatherproof copy of their shipping papers.
C. painted stencils identifying the hazardous material.
D. their schedule for transportation of hazardous materials.

_____ 68. What is a diamond shaped, color-coded sign placed on bulk transportation containers? (1153) *[1072, 4.2.1]*

A. Label
B. Placard
C. Marking
D. Four-digit ID number

_____ 69. What placard designation is used for mixed loads where the transport vehicle contains non-bulk packages with two or more package categories of hazardous materials? (1154-1156) *[1072, 4.2.1]*

A. DANGEROUS
B. Miscellaneous
C. Multiple hazards
D. n.o.s (Not otherwise specified)

_____ 70. What is a 3.9 inch (100 mm) square-on-point diamond that identifies hazardous materials within packaging? (1156) *[1072, 4.2.1]*

A. Label
B. Placard
C. Marking
D. Four-digit ID number

_____ 71. What is a descriptive name, identification number, weight, or specification that includes instructions, cautions, or U.N. marks, and is required on outer packaging of hazardous materials? (1156) *[1072, 4.2.1]*

A. Label
B. Placard
C. Marking
D. Four-digit ID number

_____ 72. Which class of hazards is characterized by thermal and mechanical hazards in the form of blast pressure waves, shrapnel and fragmentation, and incendiary thermal effects? (1159-1160) *[1072, 5.2.1]*

A. Class 1
B. Class 2
C. Class 3
D. Class 4

_____ 73. Most hazmat incidents, such as gasoline and diesel fuel spills, involve what hazard class? (1164) *[1072, 5.2.1]*

A. Class 3
B. Class 4
C. Class 5
D. Class 6

_____ 74. In addition to burning, all flammable and combustible liquids exhibit varying degrees of: (1164) *[1072, 4.2.1]*

A. toxicity.
B. infectivity.
C. corrosivity.
D. fragmentation.

_____ 75. Which statement about oxidizers is accurate? (1168) *[1072, 4.2.1]*

A. They cannot burn without air being present.
B. They vigorously support combustion and may be explosive.
C. They may produce hydrogen gas when in contact with metal.
D. Although they support combustion, they are not an explosive hazard.

_____ 76. Biohazards such as infectious substances are part of which hazardous class? (1169) *[1072, 5.2.1]*

A. Class 3
B. Class 4
C. Class 5
D. Class 6

_____ 77. Class 7 placards may come in white or yellow, and they bear the unique trefoil symbol for: (1176) *[1072, 4.2.1]*

A. radiation.
B. explosives.
C. infectious diseases or biohazards.
D. oxidizing substances or organic peroxides.

_____ 78. NFPA 704, *Standard System for the Identification of the Hazards of Materials for Emergency Response* gives widely recognized methods for indicating the presence of hazardous materials: (1179) *[1072, 4.2.1]*

A. at residential occupancies.
B. for air and water transport.
C. for long-distance trucking operations.
D. at commercial, manufacturing, institutional, or other fixed-storage facilities.

_____ 79. In the NFPA 704 System, what does a "4" in the yellow background indicate? (1179) *[1072, 4.2.1]*

A. High flammability
B. Severe instability
C. Low health hazard
D. Radiological or nuclear hazards

_____ 80. Uniform classification of hazardous substances and uniform labeling standards are key elements of: (1180) *[1072, 4.2.1]*

A. military markings.
B. the Global Health System (GHS).
C. the Globally Harmonized System (GHS).
D. the Department of Homeland Security (DHS).

_____ 81. OSHA's Hazard Communication Standard (HCS) requires: (1181) *[1072, 4.2.1]*

A. employers to identify hazards in the workplace.
B. employees to wear appropriate personal protective equipment.
C. transportation facilities to declare the presence of hazardous materials.
D. employers to remove all hazardous materials from the workplace.

_____ 82. The Canadian Workplace Hazardous Materials Information System (WHMIS): (1182) *[1072, 4.2.1]*

A. does not require hazardous products to be labeled and marked.
B. does not spell out requirements for the use of safety data sheets.
C. is most commonly met by providing two types of labels: supplier and workplace.
D. requires hazardous materials be labeled according to OSHA's Hazards Communication Standard (HCS).

_____ 83. In Mexico, general caution signals are: (1182) *[1072, 4.2.1]*

A. round.
B. triangular.
C. hexagonal.
D. rectangular.

_____ 84. Chemical Abstract Service® (CAS®) registry numbers are unique numerical identifiers assigned to: (1182) *[1072, 4.2.1]*

A. fixed facilities.
B. transportation hubs.
C. trucks, tankers, ships, barges, and airplanes that transport hazardous materials.
D. individual chemicals, chemical compounds, polymers, mixtures, alloys, and some biological sequences.

_____ 85. In the U.S. and Canada, military markings are: (1182) *[1072, 4.2.1]*

A. uniform.
B. not necessarily uniform.
C. identical to national systems.
D. the same as the Globally Harmonized System (GHS).

_____ 86. Which is NOT included on pesticide labels in the U.S. and Canada? (1182-1188) *[1072, 4.2.1]*

A. Signal word
B. Supplier identification
C. EPA/Canadian PCP number
D. U.N. four-digit identification number

_____ 87. Under ANSI Z535.1, what color means Warning? (1189) *[1072, 4.2.1]*

A. Red
B. Green
C. Yellow
D. Orange

_____ 88. The *Emergency Response Guidebook* (*ERG*): (1190) *[1072, 4.2.1, 5.3.1]*

A. is designed primarily for use at fixed-facility locations.
B. will be more specific and accurate than information on shipping papers.
C. addresses all possible circumstances that may be associated with a hazardous response incident.
D. provides guidance to personnel who may be first to arrive at a scene of a transportation incident involving hazmat.

_____ 89. Shipping papers must accompany: (1200) *[1072, 4.2.1, 5.3.1]*

A. any bill of lading or waybill.
B. shipments of hazardous materials.
C. hazardous materials at fixed facilities.
D. permanent storage containers of hazardous waste.

_____ 90. Safety data sheets: (1200) *[1072, 4.2.1, 5.3.1]*

A. are not formatted according to GHS specifications.
B. are confidential and should not be accessed by first responders.
C. should only be utilized by responders trained at the Technician level and above.
D. are often the best source of information about a particular material to which emergency responders have access.

_____ 91. Chemical Inventory Lists (CILs) at facilities usually contain information about locations of materials within a facility, making them useful tools for: (1202) *[1072, 4.2.1, 5.3.1]*

A. setting up decontamination corridors.
B. differentiating between different types of radiation.
C. identifying containers that have been damaged or are missing labels or markings.
D. determining where to most appropriately dispose of biohazardous waste materials.

_____ 92. What are CAMEO and WISER? (1203-1204)

A. Digital databases of shipping papers
B. Electronic technical resources designed to help in hazmat incidents
C. Forums for emergency responders and the public to work together
D. Digital reference sources for international standards on the transportation of chemical products