



## SAMPLE GENERAL ENVIRONMENTAL HEALTH QUESTIONS

The questions below reflect not only information presented in the study section, but also demonstrate the question format used on the exam, as well as the technical level of competence expected. The questions below are representative of the technical areas covered in the exam.

1. What is the **MOST** common cause of bacterial meningitis in children under five years of age?
  - (A) *Neisseria meningitides*
  - (B) Group B Streptococci
  - (C) *Streptococcus pneumoniae*
  - (D) *Haemophilus influenzae* type B
  
2. How is "giardiasis" **USUALLY** transmitted to others?
  - (A) Person-to-person transfer of cysts from the feces of the infected individual.
  - (B) Drinking unfiltered water from streams and lakes.
  - (C) Drinking unboiled water from streams and lakes.
  - (D) Drinking inadequately chlorinated water from a municipal water distribution system.
  
3. Which of the following duties of state and local health agencies is intended to ensure that the public's health and welfare are protected?
  - (A) Community-intensive planning
  - (B) Statutory administrative action
  - (C) Regulatory responsibilities
  - (D) Plan implementation
  
4. Which of the following is a measure of the amount of light scattered by particles suspended in a water test sample?
  - (A) Formazin Turbidity Units (FTU)
  - (B) Nephelometric Turbidity Units (NTU)
  - (C) Hydrosyntalic Turbidity Units (HTU)
  - (D) Lorcetic Turbidity Units (LTU)

5. What is an epidemic?
- (A) The constant presence of a disease within a community or region
  - (B) The presence of an infectious agent on a body surface
  - (C) The presence of infection in a host without clear, recognizable clinic symptoms
  - (D) The occurrence in a community or region of cases of an illness clearly in excess of expectancy
6. What portal of entry should a field sanitarian protect to avoid contracting Lyme disease?
- (A) Skin
  - (B) Respiratory tract
  - (C) Reproductive organs
  - (D) Digestive tract
7. Swimmer's itch is a common name for which of the following diseases?
- (A) Leptospirosis
  - (B) Subdural dermatitis
  - (C) Schistosomiasis
  - (D) Trichiniasis
8. Which of the following factors would **LEAST** contribute to the emergence of a new infectious disease?
- (A) Human behavior
  - (B) Heat disinfection
  - (C) Antibiotic use
  - (D) Disinfectant use
9. Listeriosis is **COMMONLY** associated with:
- (A) contaminated water.
  - (B) contaminated food.
  - (C) infected mice.
  - (D) infected birds.
10. Hemolytic Uremic Syndrome is caused by infection with
- (A) *Dracunculus medinensis*.
  - (B) *Staphylococcus aureus*.
  - (C) *Escherichia coli* 015 7:H7.
  - (D) *Salmonella typhimurium*.

11. The basic principles of disease control include all of the following EXCEPT

- (A) lag phase.
- (B) control of disease source.
- (C) mode of transmission.
- (D) susceptibility.

12. Which one of the following phrases MOST accurately describes the term endemic?

- (A) Sporadic occurrence of an illness
- (B) Illnesses that exceed expected levels
- (C) All illnesses present at any one time
- (D) Constant presence of an illness

13. The interval between exposure to an infectious agent and the appearance of the first symptom is called the:

- (A) transmission period.
- (B) susceptible period.
- (C) reactive period.
- (D) incubation period.

14. An establishment known to have imminent health hazards is not closed by the inspecting regulatory authority. This example BEST fits the definition of a :

- (A) malfeasance.
- (B) misfeasance.
- (C) nonfeasance.
- (D) controlling factor.

15. Vehicleborne, vectorborne, or airborne are all examples of:

- (A) indirect mode of transmission.
- (B) direct mode of transmission.
- (C) hosts.
- (D) life cycle sequences.

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## SAMPLE STATUTES AND REGULATION QUESTIONS

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1. An employer is held liable for the torts of its employees committed within the scope of their employment. This is referred to as:
  - (A) respondeat superior.
  - (B) parens patriae.
  - (C) substituted judgment.
  - (D) corporate privilege.
  
2. Performance of an authorized act in a unauthorized manner is called:
  - (A) nonfeasance.
  - (B) misfeasance.
  - (C) malfeasance.
  - (D) disfeasance.
  
3. An action authorized by law to restrict or prevent the movement of goods for the protection of public health, safety, and welfare is called an order of:
  - (A) injunction.
  - (B) withholding.
  - (C) embargo.
  - (D) seizure.
  
4. What is the federal agency that regulates food additives?
  - (A) Centers for Disease Control and Prevention
  - (B) Consumer Product Safety Commission
  - (C) Department of Agriculture
  - (D) Food and Drug Administration
  
5. When a legal action is being prepared, one of the first steps a sanitarian should take is to:
  - (A) obtain a warrant.
  - (B) obtain a court order.
  - (C) keep accurate records.
  - (D) check with other agencies.

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## SAMPLE FOOD PROTECTION QUESTIONS

The questions below *may not* reflect information presented in the study section, but instead demonstrate the question format used on the exam, as well as the technical level of competence expected. The questions below do not cover all of the technical areas found on the exam.

1. How is the term "contamination" defined when used in connection with a communicable disease?
  - (A) Infection of an individual or animal with pathogenic organisms.
  - (B) Presence of pathogenic agents on a surface, article, or substance.
  - (C) Transfer of a vector, regardless of time or the nature of the host.
  - (D) Contact between two or more sources of infection.
  
2. What is the **MOST** common contributing factor to foodborne illness?
  - (A) insect and rodent infestations
  - (B) dirty equipment
  - (C) incorrect labeling of containers
  - (D) improper holding temperatures
  
3. Why are some foods classified as potentially hazardous?
  - (A) They have a pH below 4.6.
  - (B) They have a water activity below 0.85.
  - (C) They support rapid growth of pathogenic microorganisms.
  - (D) They require rapid and thorough cooking.
  
4. Which food does not require refrigeration at 41°F (5°C)?
  - (A) open container of garlic in oil
  - (B) tofu
  - (C) sliced/cut cantaloupe
  - (D) ultra-pasteurized creamers

5. What is the **BEST** means of inhibiting the growth of microorganisms in fresh meat?
- (A) topical use of approved hypochlorite solutions
  - (B) exposure to ultraviolet light for 30 minutes
  - (C) chemical preservatives
  - (D) adequate refrigeration and cleanliness
6. What is the **MAXIMUM** accumulated time that potentially hazardous foods can safely be exposed to the temperature danger zone?
- (A) 2 hours
  - (B) 4 hours
  - (C) 6 hours
  - (D) 8 hours
7. If time only is used as a public health control, the **MAXIMUM** period of time recommended by the FDA for potentially hazardous food to be held is:
- (A) 2 hours.
  - (B) 4 hours if the warmest part of the food item does not exceed 120°F
  - (C) 6 hours if the warmest part of the food item does not exceed 70°F.
  - (D) This public health control is never permitted.
8. What is the **MINIMUM** period of time that the FDA recommends employees wash their hands and arms up to the elbow?
- (A) 10 seconds
  - (B) 20 seconds
  - (C) 30 seconds
  - (D) 40 seconds
9. Unpasteurized eggs **NOT** intended for immediate service should be cooked to:
- (A) 165°F for 15 seconds
  - (B) 155°F for 15 seconds.
  - (C) 145°F for 15 seconds.
  - (D) 140°F for one minute.

10. What is the usual mode of infection from *Salmonella*?
- (A) ingestion of contaminated food
  - (B) ingestion of contaminated water
  - (C) contact with an active case
  - (D) contact with fomites
11. What is the source of scombroid poisoning?
- (A) histamines in the muscle of fish
  - (B) sprouted green potatoes
  - (C) undercooked pork
  - (D) rice contaminated with rodent feces.
12. All of the following are signs of spoiled fish **EXCEPT**:
- (A) strong odor.
  - (B) elastic flesh.
  - (C) gray gills.
  - (D) sunken eyes.
13. Which of the following shellfish are **MOST** likely to cause illness?
- (A) oysters
  - (B) crabs
  - (C) shrimp
  - (D) scallops
14. The laboratory reports a positive coliform test that exceeds permissible limits on a bottle of pasteurized milk. What does this indicate?
- (A) Improper bactericidal treatment of the equipment.
  - (B) Improper virucidal treatment of the equipment.
  - (C) A contaminated water supply.
  - (D) A contaminated food supply.
15. What is the **MOST** effective practice for preventing trichinosis in people?
- (A) Be certain that ground meat is freshly ground at the time of purchase.
  - (B) Be sure that fresh pork is thoroughly cooked.
  - (C) Avoid the consumption of ground meat products.
  - (D) Cook steak until well done.

16. A HACCP plan is **NOT** required when:

- (A) smoking foods as a method of preservation.
- (B) cooling and reheating potentially hazardous foods in bulk.
- (C) performing reduced oxygen packaging.
- (D) using food additives or adding other components to preserve food or render it non-potentially hazardous.

17. What should **NOT** be done with food samples collected during a foodborne illness investigation?

- (A) refrigerate
- (B) freeze
- (C) seal
- (D) label

18. What is the **PRIMARY** requirement in designing a food service facility?

- (A) durability
- (B) cleanability
- (C) appearance
- (D) convenience

19. What is the **MOST** important rule of food storage?

- (A) Follow the "first in, first out" rule.
- (B) Store products in order of "pull by" date.
- (C) Repackage dry foods into metal containers.
- (D) Store canned goods under refrigeration.

20. Insecticides/pesticides may be stored in all ways **EXCEPT**:

- (A) in a metal locked cabinet.
- (B) on the lowest shelf in the storage room.
- (C) above the dishwashing sinks.
- (D) in the basement separate from food and other chemicals.

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## SAMPLE POTABLE WATER QUESTIONS

The questions below may not reflect information presented in the study section, but instead demonstrate the question format used on the exam, as well as the technical level of competence expected. The questions below do not cover all of the technical areas found on the exam.

1. What type of well is considered **LEAST** likely to become contaminated?  
 (A) Drilled  
 (B) Bored  
 (C) Driven  
 (D) Dug
2. Diatomaceous earth filters:  
 (A) should be supplemented by a chlorination system.  
 (B) should be integrated into a rapid sand filtration system.  
 (C) can be used for a public water treatment system.  
 (D) can be used in a public sewer treatment system.
3. Microbial pollution travels only a short distance through:  
 (A) sandstone.  
 (B) smooth clay.  
 (C) fissured rock.  
 (D) limestone.
4. What type of filter is recommended for use in small communities and rural places?  
 (A) Diatomaceous earth  
 (B) Granular  
 (C) Cartridge  
 (D) Slow sand
5. All of the following are used to disinfect water **EXCEPT**:  
 (A) chlorine.  
 (B) bromine.  
 (C) fluorine.  
 (D) iodine.

6. Backsiphonage may be prevented by all of the following methods EXCEPT:
- (A) hydrostatic loops.
  - (B) vacuum breakers.
  - (C) air gap separation.
  - (D) backpressure units.
7. Which of the following is the LEAST effective method for cadmium removal from drinking water?
- (A) Activated carbon *(reverse osmosis)*
  - (B) Iron coagulation
  - (C) Lime softening
  - (D) Ion exchange
8. Before a drinking water sample is taken, the sampling tap should be clean, free of leaks, and flushed for how long?
- (A) 1 to 1-1/2 minutes
  - (B) 2 to 3 minutes
  - (C) 4 to 5 minutes
  - (D) 6 to 7 minutes
9. What contaminant has been associated with learning and cognitive disorders in children who drink contaminated water?
- (A) Manganese
  - (B) Copper
  - (C) Lead
  - (D) Parathion

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## SAMPLE WASTEWATER QUESTIONS

The questions below may not reflect information presented in the study section, but instead demonstrate the question format used on the exam, as well as the technical level of competence expected. The questions below do not cover all of the technical areas found on the exam.

1. The wastewater from the flushing of a water closet, latrine, or privy is referred to as:
  - (A) gray water.
  - (B) black water.
  - (C) green water.
  - (D) brown water.
  
2. If a septic tank is pumped during a wet period, the:
  - (A) water may flow into the tank.
  - (B) field may flood the tank.
  - (C) tank may float out of the ground.
  - (D) tank may be crushed by the wet earth.
  
3. Nutrients associated with eutrophication include all of the following **EXCEPT**:
  - (A) organic carbon.
  - (B) potassium.
  - (C) nitrogen.
  - (D) phosphates.
  
4. Which of the following is **LEAST** important when reducing sewage to gases?
  - (A) Anaerobic bacteria
  - (B) Earthworms
  - (C) Protozoa
  - (D) Aerobic bacteria

5. A septic tank maintenance worker has checked an empty tank for the presence of hydrogen sulfide ( $H_2S$ ). The test was negative, and there are no odors indicating the presence of other hazardous gases. Is the tank safe to enter without a respirator and supplied air?
- (A) Yes, because hydrogen sulfide and odors were not detected
  - (B) No, because oxygen content and methane were not tested
  - (C) Yes, because the absence of odors and  $H_2S$  indicates acceptable confined space entry conditions
  - (D) No, because a lack of  $H_2S$  is a sign of a hazardous confined space atmosphere
6. All of the following are true about ozone as a disinfectant **EXCEPT** which one?
- (A) Nontoxic to aquatic organisms
  - (B) Source of dissolved oxygen
  - (C) Excellent viricide
  - (D) Long-lasting residual
7. Aerobic bacteria require all of the following nutrients **EXCEPT**:
- (A) carbon.
  - (B) magnesium.
  - (C) phosphorus.
  - (D) nitrogen.
8. What does a mottled brown and red soil indicate?
- (A) Unsuitability for absorption due to chemical composition
  - (B) Suitability for absorption due to granular structure
  - (C) Inadequate aeration methods
  - (D) Adequate agglomeration
9. Alternative small waste water treatment systems are considered **UNLESS**:
- (A) impervious formations are found at a depth of 10 feet.
  - (B) space is limited and surface water supplies are inadequate.
  - (C) highly porous formations exist.
  - (D) high groundwater exists.

10. Lime coagulation, mixed media filtration, and activated carbon filtration will greatly reduce:
- (A) heavy metals.
  - (B) biological contaminants.
  - (C) EPA priority pollutants.
  - (D) EPA listed hazardous wastes.
11. It is known that some common pathogenic organisms found in wastewater will survive more than \_\_\_\_\_ of harsh temperature extremes:
- (A) 2 months
  - (B) 5 months
  - (C) 2 years
  - (D) 5 years
12. A storm sewer is used to:
- (A) remove rain other standing surface water
  - (B) remove sewage and storm water
  - (C) remove household water waste and gutter drain water
  - (D) remove non-toxic, non-hazardous wastewater
13. Stream pollution is sometimes apparent by:
- (A) increased levels of available oxygen in the water.
  - (B) a zone of degradation.
  - (C) large numbers of crayfish and cristivomer species.
  - (D) large numbers of small fish.
14. A young lake is considered to be:
- (A) eutrophic.
  - (B) mesotrophic.
  - (C) oligotrophic.
  - (D) ohytrophic.

15. If the septic tank will also have a garbage disposal unit feeding into it the:
- (A) size of the tank should be increased 50 percent.
  - (B) tank should have an agitator.
  - (C) tank should not be equipped with a gas baffle.
  - (D) tank should not be constructed with precast concrete.
16. Sludge accumulation in a tank serving a normal home has been estimated at:
- (A) 40 to 50 liters per person per year.
  - (B) 69 to 80 gals. per person per year.
  - (C) 18 to 21 gals. per person per year. *69-80 litres / year*
  - (D) 2.2 gals. per person per year.
17. How often should a septic tank for a private home be serviced?
- (A) every year
  - (B) every 5 to 10 years
  - (C) every 3 to 5 years
  - (D) every 10 years
18. Human disease from aerosols of wastewater:
- (A) is related primarily to wastewater treatment by the activated sludge, trickling filter, and spray irrigation processes.
  - (B) has been demonstrate from pathogens recovered in aerosols from the spray irrigation of treated wastewater.
  - (C) may be caused by very small numbers of organisms.
  - (D) is a hazard even to those who have had subclinical infections, and thus should have been immunized.
19. Plants absorb certain constituents of wastewater; using wastewater for irrigation of consumable plant products may present a health hazard to humans if the water contains:
- (A) nitrates.
  - (B) iron.
  - (C) cadmium.
  - (D) chlorides.
20. After the servicing (pumping) of a septic tank it is essential that the tank or lid be:
- (A) cleaned with a bleach or chlorine product.
  - (B) scrubbed to remove hardened sludge.
  - (C) recolonized with a commercial biological product containing yeast.
  - (D) replaced and secured for safety purposes.

## SAMPLE SOLID AND HAZARDOUS WASTE QUESTIONS

The questions below may not reflect information presented in the study section, but instead demonstrate the question format used on the exam, as well as the technical level of competence expected. The questions below do not cover all of the technical areas found on the exam.

1. According to the *Resource Conservation and Recovery Act (RCRA)*, how must hazardous household waste be disposed?
  - (A) Household waste is exempt from RCRA requirements
  - (B) It must be disposed as a hazardous waste by a professional hazardous waste company
  - (C) It must be incinerated
  - (D) It may be disposed in a storm drain or sanitary sewer
2. The grinding of garbage is an acceptable method of:
  - (A) garbage disposal.
  - (B) volume reduction.
  - (C) wet oxidation.
  - (D) energy recovery.
3. A solid waste manager is trying to reduce lead in the solid waste stream. What should be targeted in the municipal waste stream as a **MAJOR** contributor of lead to the environment?
  - (A) Fluorescent light tubes
  - (B) Lead acid batteries
  - (C) Household batteries
  - (D) Rechargeable batteries
4. All of the following are considered advantages of using the "shredded solid waste" landfill method **EXCEPT** which one?
  - (A) It does not cause odors
  - (B) It may require daily earth cover
  - (C) It will readily absorb precipitation
  - (D) It reduces insect breeding

5. The **BEST** sanitary landfill method for a location with rolling terrain is the:
- (A) low-area method.
  - (B) valley or ravine area method.
  - (C) trench method.
  - (D) area or ramp method.
6. Why is it important for a business that generates hazardous waste to deal only with licensed disposal companies that have a good compliance history?
- (A) Large companies with good compliance histories generally have deep pockets
  - (B) Once the hazardous waste disposal company picks up the waste, it becomes the responsible party
  - (C) The business is held accountable for where and how the hazardous waste generated is disposed of
  - (D) It is only important if the business generates 220 pounds or more per month of hazardous waste
7. Which of the following is NOT a type of hazardous waste incinerator?
- (A) Pressurized
  - (B) Fluidized
  - (C) Fixed hearth
  - (D) Rotary kiln
8. Which federal law regulates underground storage tanks for hazardous substances?
- (A) *Clean Water Act*
  - (B) *Federal Water Pollution Control Act*
  - (C) *Resource Conservation and Recovery Act*
  - (D) *Solid Waste Disposal Act*

9. A measure of the probability and severity of adverse effects under specific conditions **BEST** describes:
- (A) risk.
  - (B) hazard.
  - (C) exposure.
  - (D) toxicity.
10. Which of the following sampling devices is **BEST** for collecting undisturbed soil samples?
- (A) Auger
  - (B) Shelby tube
  - (C) Split spoon
  - (D) Veihmeyer rod

90 %

## SAMPLE HAZARDOUS MATERIALS QUESTIONS

The questions below may not reflect information presented in the study section, but instead demonstrate the question format used on the exam, as well as the technical level of competence expected. The questions below do not cover all of the technical areas found on the exam.

1. What is the term for a statistical estimate of an oral dose of a chemical that produces a lethal effect on half of an animal population?
  - (A) LC<sub>50</sub>
  - (B) LD<sub>50</sub>
  - (C) EC<sub>50</sub>
  - (D) ED<sub>50</sub>
  
2. The dose-response relationship of a toxic substance depends on all of the following **EXCEPT** the:
  - (A) amount and concentration of the substance.
  - (B) pH of the substance.
  - (C) duration of exposure to the substance.
  - (D) toxicity of the substance.
  
3. Which respiratory device provides the **BEST** protection?
  - (A) Positive pressure respirator with a full face piece
  - (B) Negative pressure respirator with a full face piece
  - (C) Full-face canister respirator
  - (D) Half-face respirator
  
4. The Emergency Planning and Community Right-to-Know-Act (SARA Title III) requires the disclosure of all of the following **EXCEPT** type and quantities of:
  - (A) chemicals produced on site.
  - (B) chemicals accidentally discharged into the atmosphere.
  - (C) chemicals routinely discharged into the atmosphere.
  - (D) all chemicals routinely discharged into the atmosphere.

5. For first responders at an incident, which one of the following is listed correctly according to order of importance?

- (A) Responder safety, environmental safety, public safety, property protection
- (B) Public safety, property protection, responder safety, environmental safety
- (C) Responder safety, public safety, environmental safety, property protection
- (D) Property protection, public safety, responder safety, environmental safety

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## SAMPLE VECTORS, PESTS, AND WEEDS QUESTIONS

The questions below may not reflect information presented in the study section, but instead demonstrate the question format used on the exam, as well as the technical level of competence expected. The questions below do not cover all of the technical areas found on the exam.

1. Rocky Mountain spotted fever is transmitted by:  
 (A) deerflies.  
 (B) dog ticks.  
 (C) deermmites.  
 (D) chiggers.
2. What are the peak seasons for rats to breed in temperate zones?  
 (A) Spring and Fall  
 (B) Summer and Winter  
 (C) Winter and Spring  
 (D) Fall and Summer
3. Which one of the following pesticides can be legally used in the United States by the public?  
 (A) Diazinon  
 (B) Silvex  
 (C) 2,4,5,-T  
 (D) Mercury
4. Poison ivy, poison oak, and poison sumac contain oleoresin that is found in all parts of the plant **EXCEPT** the:  
 (A) leaves.  
 (B) flowers.  
 (C) bark.  
 (D) wood.
5. Psittacosis is **MOST** commonly spread by:  
 (A) bats.  
 (B) shellfish.  
 (C) rodents.  
 (D) pigeons.

6. Hay fever is correctly referred to as:
- (A) leguminosis.
  - (B) pollenosis.
  - (C) asthma.
  - (D) sinusitis.
7. Which of the following is **MOST** effective for controlling ragweed?
- (A) Fenthion
  - (B) Dieldrin
  - (C) 2,4-D
  - (D) Petroleum oil
8. The term "endemic" means:
- (A) sporadic occurrence of an illness
  - (B) constant presence of an illness
  - (C) all illnesses present at any one time
  - (D) an unusually large number of persons with the same illness.
9. The interval between exposure to an infectious agent and the appearance of the first symptom is called the:
- (A) lag time.
  - (B) susceptible period.
  - (C) incubation period.
  - (D) primary period.
10. Schistosomiasis is a/an:
- (A) water contact disease.
  - (B) foodborne disease.
  - (C) milkborne disease.
  - (D) airborne disease.
11. A disease transmitted by birds and bird droppings is:
- (A) dengue fever.
  - (B) psittacosis.
  - (C) tularemia.
  - (D) murine typhus.

12. An infected organism which does not exhibit symptoms during the spread of an illness is called a:
- (A) reservoir.
  - (B) parasite.
  - (C) host.
  - (D) carrier.
13. The killing of an infectious agent outside the body by chemical or physical means is termed:
- (A) detoxification.
  - (B) deodorization.
  - (C) destabilization.
  - (D) disinfection.
14. Rocky Mountain spotted fever is spread by:
- (A) flies.
  - (B) spiders.
  - (C) cockroaches.
  - (D) ticks.
15. Many diseases and infestations have common names that can confuse the professional when referred to by lay individuals and often children, the term cooties refers to a/an:
- (A) flea infestation.
  - (B) infestation of bedbugs.
  - (C) lice infestation.
  - (D) infestation of flies.

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## SAMPLE RADIATION PROTECTION QUESTIONS

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1. The term rad means:
  - (A) required administered dose.
  - (B) radiation admitted dose.
  - (C) roentgen absorbed dose.
  - (D) radiation absorbed dose.
2. Which of the following have little penetrating power and are normally a hazard to health only in the form of internal radiation received through ingestion, inhalation, or open wounds?
  - (A) X-rays
  - (B) Alpha particles
  - (C) Beta particles
  - (D) Gamma rays
3. Beta radiation is **MOST** commonly blocked by which one of the following materials?
  - (A) Lead
  - (B) Concrete
  - (C) Magnesium alloy
  - (D) Glass or plastic
4. Microwaves are reflected by:
  - (A) metals.
  - (B) plastic.
  - (C) glass.
  - (D) polymers.
5. The energy of ionizing radiation is measured in:
  - (A) ergs of energy per gram.
  - (B) one electrostatic unit.
  - (C) electron volts (eV).
  - (D) one-person sievert (Sv).

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6. The term "frequency" cannot be described as:
- (A) waves.
  - (B) particles.
  - (C) vibrations.
  - (D) oscillations.
7. The shorter the wave length the:
- (A) higher the frequency and lower the energy.
  - (B) lower the frequency and energy.
  - (C) lower the frequency and higher the energy.
  - (D) higher the frequency and energy.
8. The roentgen is a measure of the ionization in air produced by exposure to:
- (A) x-rays or gamma rays.
  - (B) alpha particles.
  - (C) beta particles.
  - (D) all of the above.
9. The absorption of how many ergs (energy-per-gram) of air represents one roentgen?
- (A) about 150
  - (B) about 100
  - (C) about 86
  - (D) about 50
10. The term "rem" is short for:
- (A) roentgen energy measure.
  - (B) roentgen equivalent measure. *roentgen equivalent MAN*
  - (C) radiation energy measure.
  - (D) none of the above.
11. Which term is used to show the exposure of large populations to low level radiation?
- (A) person-rem
  - (B) gamma-rem
  - (C) radiation-rem
  - (D) quantum-rem

12. The rate at which atoms of radioactive sources (radionuclides) disintegrate are measured in:
- (A) rems.
  - (B) rods.
  - (C) curies.
  - (D) roentgens.
13. Isotopes of the same element have:
- (A) the same mass number but different atomic numbers.
  - (B) the same atomic number but different mass numbers.
  - (C) different atomic and mass numbers.
  - (D) the same atomic and mass numbers.
14. Which of the following have little penetrating power and are normally a hazard to health only in the form of internal radiation received through ingestion, inhalation, or open wounds?
- (A) x-rays
  - (B) alpha particles
  - (C) beta particles
  - (D) gamma ray

46 6/6

## SAMPLE OCCUPATIONAL SAFETY AND HEALTH QUESTIONS

The questions below may not reflect information presented in the study section, but instead demonstrate the question format used on the exam, as well as the technical level of competence expected. The questions below do not cover all of the technical areas found on the exam.

1. What is the danger and/or hazard posed by an etiological agent?
  - (A) Corrosive reaction
  - (B) Asphyxiation
  - (C) Human disease
  - (D) Allergic reaction
  
2. No person should be permitted to work in a trench or pit in sandy clay soil that has unsupported sides or banks higher than:
  - (A) 2 feet.
  - (B) 3 feet.
  - (C) 4 feet.
  - (D) 5 feet.
  
3. An employer moves employees who have reached the upper permissible level of exposure to a hazardous environment, in order to prevent further exposure. What type of hazard control is this?
  - (A) Professional control
  - (B) Personal control
  - (C) Administrative control
  - (D) Engineering control
  
4. A negative pressure fit test for a protective mask:
  - (A) is done by placing both palms against the intake filters.
  - (B) is done by placing both hands over the exhalation points.
  - (C) should be conducted at a minimum of once a week.
  - (D) should be repeated until an air leak is detected.
  
5. Quantitative risk assessments **USUALLY** measure human exposure through all of the following **EXCEPT**:
  - (A) computer models.
  - (B) blood or urine analyses.
  - (C) personal surveys.
  - (D) toxicological analyses.

100%

## SAMPLE AIR QUALITY AND NOISE QUESTIONS

The questions below may not reflect information presented in the study section, but instead demonstrate the question format used on the exam, as well as the technical level of competence expected. The questions below do not cover all of the technical areas found on the exam.

1. The **MOST** likely cause of photochemical smog is due to:
  - (A) large industries.
  - (B) chemical processing plants.
  - (C) hazardous waste incinerators.
  - (D) heavy motor vehicle traffic.
2. The industries **LEAST** likely to be a source of sulfur dioxide pollution are:
  - (A) metal smelters.
  - (B) coal and oil burning power plants.
  - (C) refineries.
  - (D) hazardous waste incinerators.
3. Scrubbers are wet collectors generally used to remove particles that form as a:
  - (A) dust, aerosol, or fog.
  - (B) mist, solid, or vapor.
  - (C) fog, mist, or dust.
  - (D) fume, dust, or mist.
4. Particle size selective inlets are used to separate particulates above and below 2 to 3 microns in size on:
  - (A) high volume samplers.
  - (B) outfall vacuums.
  - (C) baghouse air filters.
  - (D) atmospheric respirator sieves.
5. The **MOST** common type of noise measurement device used for initial inspections is the:
  - (A) octave-band analyzer.
  - (B) noise dosimeter.
  - (C) sound level meter.
  - (D) sound analyzer.

6. When two pollutants are combined, the effects are greater than the sum of the individual effects. This is called:
- (A) commensalisms.
  - (B) synergism.
  - (C) magnification.
  - (D) multiplication.
7. Air is vital to existence. In fact, in a day's time humans breathe an average of:
- (A) 3 to 4 pounds of air.
  - (B) 35 pounds of air.
  - (C) 37 pounds of air.
  - (D) 1,600 ft<sup>3</sup> of air.
8. Which component of clean, dry air has the smallest volume?
- (A) carbon monoxide
  - (B) nitrogen dioxide
  - (C) ammonia
  - (D) sulfur dioxide
9. Ozone reduces the useful life of all of the following **except**:
- (A) rubber.
  - (B) textiles.
  - (C) dyes.
  - (D) nylon.
10. Major effects on humans are caused by Los Angeles- and London-type smog, along with what two pollutants?
- (A) sulfur dioxide and hydrogen fluoride
  - (B) sulfur dioxide and carbon monoxide
  - (C) hydrogen sulfide and peroxyacyl nitrates
  - (D) ozone and nitrogen dioxide
11. Photochemical smog has been reported in congested areas with:
- (A) large industries.
  - (B) chemical processing plants.
  - (C) industries processing hazardous wastes.
  - (D) high motor vehicle traffic.

12. What type of air pollution causes bleaching of leaves in plants?
- (A) PAN - glaucous, silicosis, bronzing
  - (B) sulfur dioxide - bleaching
  - (C) industries processing hazardous wastes
  - (D) high motor vehicle traffic
13. Which of the following are not major sources of sulfur dioxide pollution?
- (A) metal smelters
  - (B) coal and oil burning power plants
  - (C) refineries
  - (D) electrical substations
14. Which of the following is not a malodorous gas?
- (A) sulfur dioxide
  - (B) hydrogen sulfide
  - (C) carbon monoxide
  - (D) phenol
15. What size particle can reach the lowest parts of the lung?
- (A) 15 microns
  - (B) 50 microns
  - (C) 3 microns
  - (D) any size particle

13<sup>61</sup>.

## SAMPLE QUESTIONS ON HOUSING

The questions below may not reflect information presented in the study sections, as well as the technical level of competence expected. The questions below do not cover all of the technical areas found on the exam.

1. Cross-connection controls include air gaps, backflow preventers, vacuum breakers, and:
  - (A) gate valves.
  - (B) indirect waste piping.
  - (C) air vents.
  - (D) bypass valves.
  
2. The drain line of an ice machine should connect to the sewer system through a/an:
  - (A) hydrostatic valve.
  - (B) indirect connection below the floor.
  - (C) open receptacle with an air gap.
  - (D) hydroduric valve.
  
3. Vent gasses from a coal-burning furnace combined with high moisture inside a chimney will form:
  - (A) a glass-like glaze.
  - (B) hydrochloric acid.
  - (C) sodium chloride.
  - (D) sulfuric acid.
  
4. What is the **PRIMARY** cause of death resulting from automobile exhaust accumulation in garages?
  - (A) Methane
  - (B) Ethylene dioxide
  - (C) Carbon monoxide
  - (D) Tetraethyl lead
  
5. The end of a waste pipe should terminate below the rim of a sink directly connected to the drainage system by at **LEAST**:
  - (A) 2 inches.
  - (B) 4 inches.
  - (C) 5 inches.
  - (D) 6 inches.

6. The most common type of injury in a home is:
- (A) a fall from the same height.
  - (B) asphyxiation.
  - (C) tripping.
  - (D) an animal bite.
7. A "S" trap is not considered legal in most state plumbing codes due to which of the following factors?
- (A) They clog easily
  - (B) They are not vented
  - (C) They are unsightly
  - (D) They do not drain
8. Which of the following products is not a traditional formaldehyde air pollution source?
- (A) Cosmetics
  - (B) Burning vegetation
  - (C) Particle board
  - (D) Computer emissions
9. Long term effects of lead poisoning include:
- (A) learning disabilities.
  - (B) severe acne.
  - (C) loss of large motor skills.
  - (D) adult diabetes.
10. A stud is a unit of building construction that is intended as a:
- (A) vertical support.
  - (B) horizontal support.
  - (C) roof only support.
  - (D) support for sheet rock.
11. A Joist is used:
- (A) to hold up a floor.
  - (B) as a horizontal support.
  - (C) as a roof only support.
  - (D) as a support for sheet rock.

12. A footing drain is required to:
- (A) control moisture.
  - (B) eliminate radon.
  - (C) keep a foundation from slipping.
  - (D) keep the feet dry while pouring concrete.
13. The chimney of the house should be a minimum of \_\_\_\_\_ above the highest structure of the home.
- (A) five feet
  - (B) three feet
  - (C) 18 inches
  - (D) level with the eave of the house
14. What is the **horizontal** part of the stairs you step on called?
- (A) Riser
  - (B) Tread
  - (C) Step
  - (D) Footer
15. What is the **vertical** part of the stairs you step on called?
- (A) Riser
  - (B) Tread
  - (C) Step
  - (D) Footer
16. When footers fail this often results in:
- (A) leaky roofs.
  - (B) warped studs.
  - (C) twisted joist.
  - (D) cracked and/or displaced foundations.
17. A plastic ground cover sealed to the foundation should be placed on the ground in the crawl space of the home to:
- (A) control moisture in the crawlspace.
  - (B) keep natural gas out of the crawlspace.
  - (C) keep underground springs from washing away footers.
  - (D) keep insects from eating the wood structure.

18. The footing drain is intended to drain water away from the base of the home to:
- (A) prevent damage to the footer and foundation.
  - (B) keep the concrete from dissolving.
  - (C) control termites.
  - (D) control mold on the footer.
19. The termite shield is placed between the:
- (A) foundation and the sill.
  - (B) footer and the foundation.
  - (C) joist and the header.
  - (D) stud and the header.
20. The maximum size of a stair riser should be:
- (A) 8<sup>1</sup>/<sub>4</sub>.
  - (B) 12".
  - (C) 6".
  - (D) 10<sup>1</sup>/<sub>4</sub>.

100° 10 50

## SAMPLE INSTITUTIONS AND LICENSED ESTABLISHMENTS QUESTIONS

The questions below may not reflect information presented in the study section, but instead demonstrate the question format used on the exam, as well as the technical level of competence expected. The questions below do not cover all of the technical areas found on the exam.

1. What is ASHRAE recommended minimal thermal standard for dwellings at 40% humidity and an air circulation rate of 45 fpm?  

(A)	57°F	57°
(B)	60°F	60°
(C)	68°F	68°
<input checked="" type="radio"/>	76°F	76°
2. The distance between the end of the water supply pipe and the sink should be how many times the diameter of the supply pipe?  

(A)	1-1/2
<input checked="" type="radio"/>	2
(C)	3
(D)	4
3. Excessive condensation, corrosion, and mildew occur when the relative humidity exceeds  

(A)	20%
<input checked="" type="radio"/>	40%
(C)	60%
(D)	80
4. Nosocomial infections are a recurring problem in:  

(A)	food establishments.
<input checked="" type="radio"/>	health care facilities.
(C)	swimming pools.
(D)	health spas.
5. **MINIMUM** wash water temperature in a hospital laundry is:  

(A)	146 to 150°F
<input checked="" type="radio"/>	160 to 167°F
(C)	170 to 178°F
(D)	185 to 196°F

6. A biohazard is:
- (A) any material that negatively impacts a biological organism.
  - (B) a material of biological composition, especially if infective, that constitutes a threat to people or their environment.
  - (C) a chemical that constitutes a threat to people or their environment.
  - (D) any virus that causes fatal disease.
7. Bloodborne pathogens are regulated by:
- (A) OSHA.
  - (B) FDA.
  - (C) CPSC.
  - (D) HHS.
8. Muerto Canyon virus (MCV) is a Hantavirus mainly carried by:
- (A) deer.
  - (B) sheep.
  - (C) mice.
  - (D) gophers.
9. The Muerto Canyon virus causes a disease that destroys what primary organ in humans?
- (A) Lungs
  - (B) Kidneys
  - (C) Liver
  - (D) Brain
10. The incidence of tuberculosis in English laboratory workers working with *M. tuberculosis* was reported to be how many times higher than for the general population?
- (A) 2 times
  - (B) 3 times
  - (C) 5 times
  - (D) 10 times

11. The term "universal precautions" refers to:
- (A) specific respiratory protection used in hospitals.
  - (B) an infection control program regulating the handling of blood and certain body fluids.
  - (C) personal and environmental protection procedures used when handling hazardous chemical wastes.
  - (D) precautions to be used when collecting samples for potential litigation.
12. The biosafety containment level suitable for work involving agents of moderate potential hazard to personnel and the environment is:
- (A) biosafety level 1.
  - (B) biosafety level 2.
  - (C) biosafety level 3.
  - (D) biosafety level 4.
13. Biological safety equipment includes:
- (A) biosafety cabinets.
  - (B) needles and syringes.
  - (C) disinfecting chemicals.
  - (D) technical manuals.
14. The three biosafety containment levels consist of a combination of:
- (A) laboratory practices, safety equipment, and facilities.
  - (B) laboratory techniques, research protocols, and safety equipment.
  - (C) research protocols, safety training, and laboratory facilities.
  - (D) laboratory practices, safety training, and research protocols.
15. The protection of personnel and the immediate laboratory environment from exposure to infectious agents by good microbiological technique and safety equipment is called:
- (A) primary containment.
  - (B) secondary containment.
  - (C) tertiary containment.
  - (D) pentiary containment.

16. The release of genetically engineered materials to the environment is regulated by:

- (A) USDA and EPA.
- (B) NIH and CDC.
- (C) EPA and AEC.
- (D) FDA and PHS.

*8/8%*  
*8/8%*

### SAMPLE SWIMMING POOLS & RECREATIONAL FACILITIES QUESTIONS

The questions below may not reflect information presented in the study section, but instead demonstrate the question format used on the exam, as well as the technical level of competence expected. The questions below do not cover all of the technical areas found on the exam.

1. Studies indicate that swimmers have a higher overall illness rate over non-swimmers:
  - (A) regardless of bathing water quality.
  - (B) due to poor regulatory practice.
  - (C) if they are over 50 years of age.
  - (D) if they swim in pools.
  
2. The treatment system of a pool is typically recommended to be installed in which of the following flow arrangements?
  - (A) Skimmer or gutter line, main drain line, adjustment valves, disinfectant feeder, hair strainer, pump, filter, pH feeder pump, adjustable inlets
  - (B) Skimmer or gutter line, main drain line, adjustment valves, hair strainer, pump, filter, pH feeder pump, adjustable inlets
  - (C) Skimmer or gutter line, main drain line, adjustment valves, pH feeder pump, hair strainer, pump filter, disinfectant feeder, adjustable inlets
  - (D) Skimmer or gutter line, main drain line, adjustment valves, hair strainer, filter aid pump, filters, disinfectant feeder, pH feeder, adjustable inlets
  
3. Swimming pool water clarity is measured in terms of NTU or Nephelometer Turbidity Units. It is recommended that a level of 0.5 NTU:
  - (A) shall be maintained.
  - (B) shall not be exceeded.
  - (C) is the minimum level.
  - (D) is the maximum level.
  
4. A swimming pool filtration system should filter the entire volume of water at a MINIMUM of every:
  - (A) 2 hours.
  - (B) 6 hours.
  - (C) 10 hours.
  - (D) 13 hours.

5. The rate of filtration for a vacuum diatomite filter should be:
- (A) 1 to 2 gpm/ft<sup>2</sup>.
  - (B) 3 to 4 gpm/ft<sup>2</sup>.
  - (C) 5 to 6 gpm/ft<sup>2</sup>.
  - (D) 7 to 8 gpm/ft<sup>2</sup>.
6. Chemicals that have been used for pool disinfection include chlorine, chloro-iso-cyanurates, bromine, and:
- (A) ammonia.
  - (B) soda ash.
  - (C) sodium thiosulfate.
  - (D) iodine.
7. Due to the large quantity of floating organisms and materials, the gutters or skimmers should receive what **MINIMUM** percent of the total pool water?
- (A) 95%
  - (B) 45%
  - (C) 60%
  - (D) 30%
8. The recommended and **MOST** effective method of maintaining pool water quality is:
- (A) super-chlorination.
  - (B) intermittent circulation, chlorination, and filtration.
  - (C) continuous recirculation, chlorination, and filtration.
  - (D) chlorination - dechlorination.
9. One advantage of using cyanuric acid additive is that it:
- (A) allows easier measurement of chlorine.
  - (B) prevents pH deterioration.
  - (C) stabilizes residual chlorine.
  - (D) requires less soda ash as an additive to the pool.
10. The acidity-alkalinity balance affects eye irritation, water coagulation, and the:
- (A) effectiveness of chlorine.
  - (B) ambient water temperature.
  - (C) effectiveness of the skimmers.
  - (D) evaporation rate.

11. The addition of sodium bicarbonate will:

- (A) raise the ambient water temperature.
- (B) lower the ambient water temperature.
- (C) raise the pH.
- (D) lower the pH.

12. To raise the pH, add:

- (A) chlorine.
- (B) muriatic acid.
- (C) soda ash.
- (D) sulfuric acid.

13. To mix acid and water, always:

- (A) add water to acid.
- (B) add acid to water.
- (C) add soda ash to acid.
- (D) stir while pouring water into the acid.

★

14. When chlorine is added to water:

- (A) one acid is formed.
- (B) two primary acids are formed.
- (C) HCl is considered the primary product.
- (D) ozone is produced in large quantities.

*Hypochlorous Acid*

15. The best control of swimmer's itch at a bathing beach is to:

- (A) add copper sulfate.
- (B) increase the chlorine residual.
- (C) lower the chlorine residual.
- (D) lower water level and allow plants to dry out.

16. The preferred method for controlling sewage from watercraft is the use of:

- (A) onboard holding tanks.
- (B) shipboard discharge.
- (C) incinerator toilet.
- (D) compost toilet.

*DWh's make sure to question carefully!*

17. Gas chlorine provides:
- (A) 50% available chlorine.
  - (B) 75% available chlorine.
  - (C) 92% available chlorine.
  - (D) 100% available chlorine.
18. The microbe primarily responsible for skin infections in whirlpools is:
- (A) *Escherichia coli*.
  - (B) *Pseudomonas aeruginosa*.
  - (C) *Shigella sonnet*.
  - (D) *Salmonella typhimurium*.
19. Water in childrens wading pools should be completely recirculated every (minimum standard):
- (A) 60 minutes.
  - (B) 90 minutes.
  - (C) 120 minutes.
  - (D) 180 minutes.
20. The ideal pH range for swimming pools is:
- (A) 6.0 to 8.5.
  - (B) 6.5 to 8.5.
  - (C) 7.2 to 7.6.
  - (D) 5.0 to 7.0.
21. The generally prohibited swimming facility from a public health perspective is a:
- (A) home outdoor pool.
  - (B) fill and draw pool.
  - (C) natural flow-through pool.
  - (D) recirculating pool.
22. It is essential that all public pools:
- (A) require footbaths.
  - (B) require pre-showering of patrons.
  - (C) run the recirculation and disinfection equipment 24 hours per day.
  - (D) shovel in at least 4 pounds of calcium hypochlorite per 10,000 gallon per 4-hour period.

23. The formula  $\frac{\text{volume of Pool}}{\text{Pump Flow Rate (GPM)} \times 60 \text{ min.}}$  = turnover rate,

will tell the:

- (A) number of hours it takes for the entire contents of the pool to pass through the filters.
  - (B) efficiency rate of the pumps.
  - (C) gallons per minute flow rate.
  - (D) chlorine demand per day.
24. The main drain should have a grate that is how much larger than the area of the discharge pipe to prevent dangerous suction effects? (absolute minimum)
- (A) Four times
  - (B) Five times
  - (C) Six times
  - (D) Seven times

79 %

## SAMPLE DISASTER SANITATION QUESTIONS

The questions below may not reflect information presented in the study section, but instead demonstrate the question format used on the exam, as well as the technical level of competence expected. The questions below do not cover all of the technical areas found on the exam.

1. The speed and effectiveness with which emergency action can be taken is dependent **PRIMARILY** on the:
  - (A) size of the emergency.
  - (B) probable number of victims.
  - (C) prior planning.
  - (D) level of the agency responding.
  
2. Evacuation and survival of individuals in an emergency or natural disaster is most often dependent on the extent to which:
  - (A) individuals can help themselves.
  - (B) how soon relief can be mustered.
  - (C) how soon a favorable environment can be restored.
  - (D) quality prior planning has taken place.
  
3. The government organization that usually deals with major disasters is the:
  - (A) American Legion.
  - (B) Federal Emergency Management Agency.
  - (C) Red Cross.
  - (D) Disaster Response Agency.
  
4. One of the **FIRST** actions an individual should take upon hearing an order for the evacuation of homes and businesses is turn off the:
  - (A) main electric power switch.
  - (B) outside gas valve.
  - (C) property water supply valve.
  - (D) public utility services to the building.
  
5. When temporary shelter is necessary in an emergency the **FIRST** consideration in shelter selection should be:
  - (A) protection of the survivors from health and safety risks.
  - (B) availability of heat, light, and space.
  - (C) the emotional state of the survivors.
  - (D) color of chlorination tablets.

6. The **minimum** amount of water per day that should be provided for natural disaster victims is:
- (A) 1 to 2 gallons per person.
  - (B) 3 to 5 gallons per person.
  - (C) 6 to 9 gallons per person.
  - (D) 10 gallons or more per person.
7. After flooding and other natural disasters, vaccination is needed for:
- (A) typhoid.
  - (B) measles.
  - (C) AIDS.
  - (D) vaccinations not required.
8. The quantity of liquid bleach (household) used to treat 1,000 gallons of bacterially contaminated water for drinking is:
- (A) 2 quarts.
  - (B) 2 pints.
  - (C) 1 pint.
  - (D) 0.5 pint.
9. A satisfactory method for disinfecting water that is not chemically or grossly polluted with bacteria is:
- (A) chlorination.
  - (B) fluorination.
  - (C) oxygenation.
  - (D) CO<sub>2</sub> treatment.
10. In emergency situations, when the water is turbid or colored, but not chemically contaminated, the chlorine dosage should be:
- (A) tripled.
  - (B) discontinued.
  - (C) decreased.
  - (D) doubled.
11. Approved emergency response plans at nuclear electric power plant sites must be tested **AT LEAST** every:
- (A) 2 years.
  - (B) 3 years.
  - (C) 4 years.
  - (D) 5 years.

12. Key components of the "HAZWOPER" program **EXCLUDE**:
- (A) safety and health programs.
  - (B) personal protection.
  - (C) training.
  - (D) sanitary requirements.
13. HAZWOPER requirements apply to:
- (A) voluntary cleanup at uncontrolled hazardous waste sites.
  - (B) routine sanitary sewer operations.
  - (C) small quantity generators of hazardous waste.
  - (D) water treatment plant operators.
14. The difference between a disaster and terrorism is best described as:
- (A) Intent
  - (B) Criminal activity
  - (C) Nature of disaster
  - (D) Number impacted

