MULTIPLE CHOICE

1. Of the following risks to human health, which causes the most human deaths?
    a. Consumer risks
    b. Chemical risks
    c. Biological risks
    d. Personal risks
    e. Physical risks

2. Which of the following would be classified as infectious diseases?
    I. pneumonia
    II. malaria
    III. measles
    a. I only
    b. II only
    c. I and II only
    d. I and III only
    e. I, II, and III

3. One of the ten leading health risks in high-income countries is
    a. malnutrition
    b. indoor smoke
    c. high blood pressure
    d. HIV
    e. unsafe drinking water

4. Chronic diseases that are made more deadly by poverty include
    I. diarrheal diseases
    II. Ebola
    III. pneumonia
    a. I only
    b. II only
    c. I and II only
    d. I and III only
    e. I, II and III

5. Which of the following is NOT a risk factor for chronic diseases in developing countries?
    a. childhood obesity
    b. unsafe water supply
    c. lack of indoor plumbing
    d. indoor air pollution
    e. lack of continual food supply

6. As a country transitions from a poor, developing country to a more affluent, developed country its health risks for disease change. Which of the following best represents the change in risk factors from the developing to the developed country?
   a. The initial challenges are obesity and poor sanitation, which change to high blood pressure and poor nutrition.
   b. The initial challenges are poor sanitation and sedentary lifestyles, which change to poor indoor air quality and obesity.
   c. The initial challenges are sedentary lifestyles and poor nutrition, which change to high blood pressure and poor urban air quality.
   d. The initial challenges are malnutrition and poor sanitation, which change to high blood pressure and obesity.
   e. The initial challenges are malnutrition and availability of tobacco, which change to poor nutrition and poor sanitation.

7. Individuals living on the Japanese islands must live with constant geologic activity in the form of earthquakes and volcanoes. These people face what type of risk to human health on a daily basis?
   a. Physical risk
   b. Parasite risk
   c. Biological risk
   d. Biochemical risk
   e. Chemical risk

8. A historical pandemic disease caused by a bacterium and carried by rodents is
   a. Cholera
   b. Tuberculosis
   c. Plague
   d. Swine Flu
   e. Hepatitis

9. All of the following are correct regarding malaria EXCEPT:
   a. malaria is caused by an infection from a *Plasmodium* protist
   b. the use of DDT alone can easily control the disease
   c. malaria causes flulike symptoms
   d. every year approximately 1 million people die from malaria
   e. the pathogen spends one stage of its life inside a mosquito

10. All of the following are correct regarding Tuberculosis EXCEPT:
    a. many people world-wide are infected while not all have developed the disease
    b. the disease is associated with airborne transmission
    c. symptoms of the disease include weakness and coughing up blood
    d. inappropriate use of antibiotics has led to antibiotic resistant strains of the disease
    e. the disease mainly primarily affects the stomach

11. All of the following are correct about emergent infectious diseases EXCEPT:
    a. the rapid movement of people can cause unexpected pandemics
    b. the diseases are all caused by mutations of known viruses
    c. many of the diseases come from pathogens that jump from animal hosts to humans
    d. the diseases can mutate rapidly to infect humans
    e. since the 1970s, an average of one new emergent disease has appeared each year

12. Which virus likely spread to humans when hunters butchered and ate chimpanzees?
    a. H1N1
    b. Hantavirus
    c. Ebola virus
    d. HIV
    e. Human Monkey Pox

13. All of the following are correct about the Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome EXCEPT:
    a. HIV/AIDS began appearing in the late 1950s.
    b. the virus is spread through drug use and the sharing of hypodermic needles
    c. HIV/AIDS first appeared in Africa
    d. more than 30 million people worldwide are infected with HIV
    e. symptoms of HIV/AIDS include a rare type of pneumonia

14. Individuals living near the Republic of Congo in Africa face an extreme biological risk. If infected with this risk, they face a 50 to 90% chance of death due to fever, vomiting, and sometimes internal and external bleeding. This disease risk is:
    a. HIV/AIDS
    b. the Ebola virus
    c. dengue fever
    d. malaria
    e. human monkey pox

15. The disease that led to the destruction of hundreds of thousands of cows world-wide and prompted wide scale change in the feeding practices of cattle is
    a. bovine spongiform encephalopathy
    b. avian influenza
    c. bovine hemorrhagic fever
    d. H1N1
    e. mutated protein prion disease

16. An advancement in medical research allows individuals infected with HIV/AIDS to lead longer lives due to
    a. the eradication of the virus in chimpanzees
    b. antiviral drugs that keep HIV populations in the body low
    c. antibiotics that cure the related pneumonia
    d. an isolation of the virus in primates
    e. antiviral drugs that work as a vaccine against AIDS

17. All of the following are correct regarding the pathogen leading to the bird flu epidemic of 2006 EXCEPT:
    a. humans have a long immune history with the virus
    b. the virus is a type of influenza virus
    c. the virus is typically passed among species of birds
    d. the virus jumped from birds to people in Asia
    e. scientists believe the virus has great potential to mutate and kill over 100 million people

18. A pathogen of an emergent disease that lives in hundreds of species of birds and is transmitted by mosquitoes is
    a. *Plasmodium*
    b. The Avian Flu virus
    c. The West Nile virus
    d. The Ebola virus
    e. *Yersinia pestis*

19. In both high- and low-income countries, ____ is needed to reduce the spread of HIV and tuberculosis.
    a. rapid notification of incidences of disease
    b. greater food availability
    c. continued education
    d. better sanitation
    e. research in genetic mutations of viruses

Table 17-1

Percentage of deaths attributable to each of six risk factors, and to all six risks combined, for child and maternal malnutrition: countries grouped by income, 2004			
Risk	**World**	**Low Income**	**Middle Income**
Percentage of Deaths			
Childhood underweight	3.8	7.8	0.7
Suboptimal breastfeeding	2.1	3.7	1.1
Vitamin A deficiency	1.1	2.2	0.3
Zinc deficiency	0.7	1.5	0.2
Iron deficiency	0.5	0.8	0.2
Iodine deficiency	0.0	0.0	0.0
All six risks	**6.6**	**12.7**	**2.1**

20. Use Table 17-1. What percentage of child deaths in low-income countries is attributable to vitamin A deficiency OR zinc deficiency?
    a. 12.7%
    b. 7.8%
    c. 3.7%
    d. 1.8%
    e. 1.5%

21. Use Table 17-1. Which risk connected to malnutrition causes the most deaths in middle-income countries?
    a. childhood underweight
    b. suboptimal breastfeeding
    c. vitamin A deficiency
   d. zinc deficiency
    e. iron deficiency

22. Use Table 17-1. If there were 15,000 child deaths in a low-income country in a particular month, what is the best estimate of the number of those deaths that are attributable to any form of malnutrition?
   a. 15,000
   b. 2400
   c. 1900
   d. 1000
   e. 300

Figure 17-1

People newly infected with HIV, 2009
Number of people newly infected with HIV annually by sex and geographical region, 2009.

Source: UNAIDS 2010.
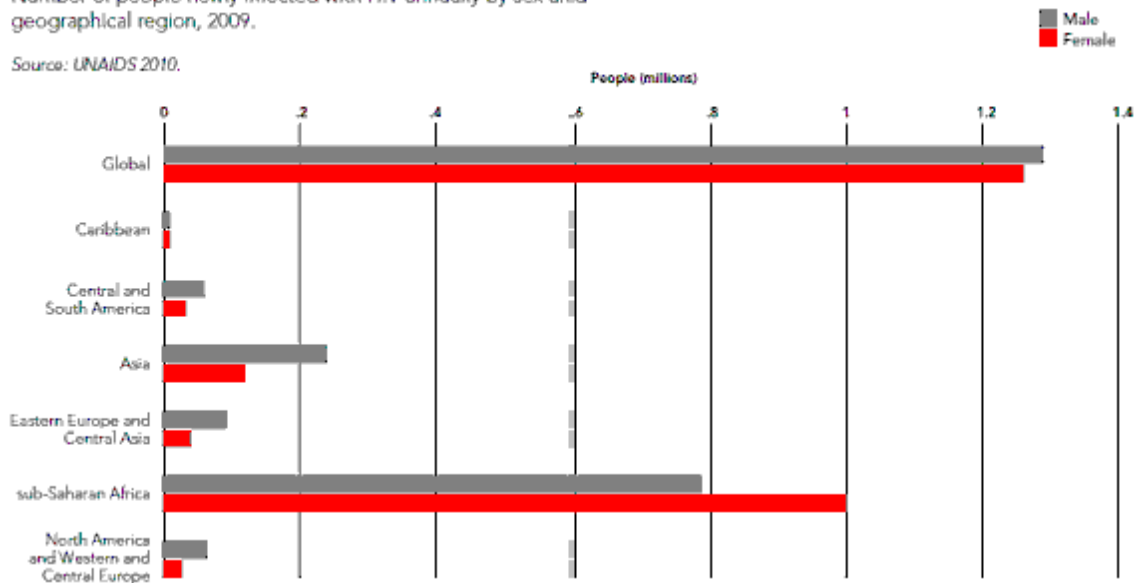
23. Use Figure 17-1. In 2009, the greatest increase in the number of women newly infected with HIV occurred in
   a. Asia
   b. sub-Saharan Africa
   c. Central and South America
   d. North America and Western and Central Europe
   e. Caribbean

24. Use Figure 17-1. In 2009, the number of newly HIV-infected individuals worldwide was approximately
   a. 200,000
   b. 1,300,000
   c. 1,700,000
   d. 2,600,000
   e. 26,000,000

25. Use Figure 17-1. In 2009, the percentage of newly HIV-infected individuals who lived in North America and Western and Central Europe was approximately
    a. 0.25%
    b. 1%
    c. 4%
    d. 8.5%
    e. 10%

26. Which of the following is a carcinogen?
    a. asbestos
    b. lead
    c. atrazine
    d. thalidomide
    e. DDT

27. Most insecticides are highly effective due to their ability to impair nerve transmission in insects. This category of chemicals is known as
    a. teratogens
    b. allergens
    c. neurotoxins
    d. endocrine disrupters
    e. carcinogens

28. Heavy metals, such as mercury and lead, pose a threat to individuals when found in the environment. They belong to the class of chemicals called
    a. carcinogens
    b. neurotoxins
    c. teratogens
    d. allergens
    e. endocrine disrupters

29. Carcinogens can cause damage to cells by
    I. damaging the genetic material of the cell
    II. interfering with the normal metabolic processes of the cell
    III. rupturing cell organelles
    a. I
    b. II
    c. I and II
    d. I and III
    e. I, II, and III

30. All of the following are examples of carcinogens EXCEPT:
    a. asbestos
    b. formaldehyde
    c. chemicals found in tobacco
   d. phthalates
    e. radon

Table 17-2

Risk	World	Low and Middle income	High income
Deaths attributed to alcohol, tobacco, and illicit drug use, and to all three risks together, by region, 2004			
Percentage of deaths			
Alcohol use	3.6	4.0	1.6
Illicit drugs	0.4	0.4	0.4
Tobacco use	8.7	7.2	17.9
All three risks	**12.6**	**11.5**	**19.6**

31. Use Table 17-2. Which risk factor is higher for the overall population than it is for high-income individuals?
    a. alcohol use
    b. illicit drugs
    c. tobacco use
    d. All of the risk factors are higher for the overall population than for high-income individuals.
    e. None of the risk factors are higher for the overall population than for high-income individuals.
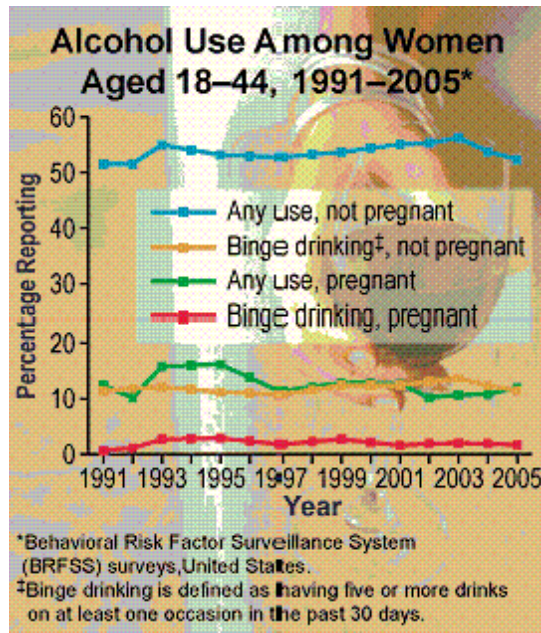
Figure 17-2

Percentage of deaths caused by tobacco for individuals over the age of 30; 2004
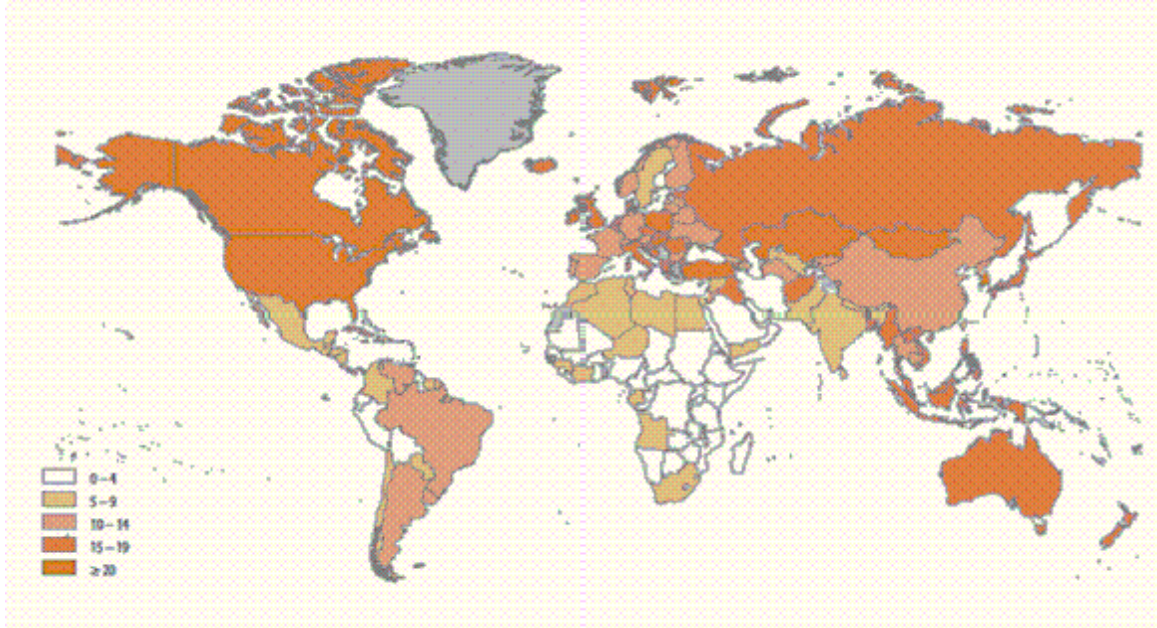
32. Use Figure 17-2. In the United States and Canada, _____ of deaths of individuals over the age of 30 are attributed to tobacco use.
    a. = 40%
    b. = 20%
    c. 15 – 19%
    d. 10 – 14%
    e. 5 – 9%

33. Use Figure 17-2. Which of the following is an accurate comparison of the use of tobacco between North America and Africa?
    a. Individuals in developed countries of North America do not readily use tobacco while individuals in the developing countries of Africa do.
    b. Developed countries of North America have high rates of death related to tobacco use while developing countries of Africa do not.
    c. Developing countries of North America have high rates of death related to tobacco use while developed countries of Africa do not.
    d. Developed countries of North America have one half as many tobacco related deaths as those of developing countries of Africa
    e. There is no difference between the deaths attributed to tobacco use of the developed countries of North America and the developing countries of Africa

34. The teratogen used in the 1950s and 1960s to treat morning sickness in pregnant women was the drug
    a. estrogen
    b. atrazine
    c. phthalate
   d. thalidomide
    e. testosterone

Figure 17-3

Alcohol Use Among Women Aged 18–44, 1991–2005*

*Behavioral Risk Factor Surveillance System (BRFSS) surveys, United States.
‡Binge drinking is defined as having five or more drinks on at least one occasion in the past 30 days.

35. Use Figure 17-3. In 2002, what percentage of women definitely put their fetus at risk of fetal alcohol syndrome?
    a. 63 %
    b. 53 %
    c. 23 %
    d. 10 %
    e. 2 %

36. Sources of endocrine disruptors in the environment include all of the following EXCEPT:
    a. wastewater from animal-rearing facilities
    b. acid deposition
    c. DDT
    d. municipal wastewater
    e. Atrazine

37. A compound in plastics that is classified as an endocrine disruptor is
    a. formaldehyde
    b. asbestos
    c. vinyl chloride
    d. phthalates
    e. PCBs

38. Studies conducted by scientists to assess the risk of chemicals include
    I. Dose-response studies
    II. Chronic studies
    III. Retrospective studies
    a. I only
    b. II only
    c. I and III only
    d. II and III only
    e. I, II and III

39. Studies that last for only 1 to 4 days in which scientists measure mortality of organisms as a response to a dose of a chemical are known as
    a. acute studies
    b. biomagnification studies
    c. prospective studies
    d. chronic studies
    e. retrospective studies

Figure 17-4

Mortality of hypothetical chemical
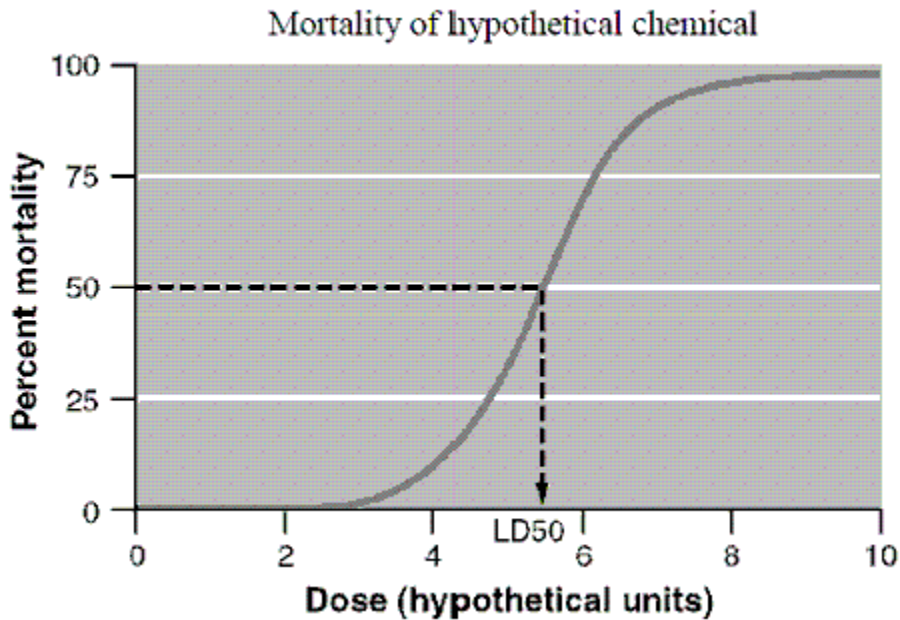
40. Use Figure 17-4. The threshold of the hypothetical chemical is approximately
    a. 1 hypothetical unit
    b. 3 hypothetical units
    c. 5.5 hypothetical units
    d. 8 hypothetical units
    e. 10 hypothetical units

41. Use Figure 17-4. The LD50 of the hypothetical chemical is approximately
    a. 3 hypothetical units
    b. 4.5 hypothetical units
    c. 5.5 hypothetical units
    d. 7 hypothetical units
    e. 10 hypothetical units

42. Use Figure 17-4. The point on the curve where the two dashed lines intersect represents all of the following EXCEPT:
    a. the dose at which 50% of the test subjects die
    b. the dose that kills the entire population
    c. the LD50
    d. a dose at which scientists can compare this chemical's lethality to other chemicals
    e. the relative toxicity of the chemical on a specific group of species

43. Use Figure 17-4. What is the "safe" concentration of this chemical in the environment that should cause no harm to most animals, according to the EPA guidelines?
   a. 0.1 hypothetical unit
   b. 0.55 hypothetical unit
   c. 1 hypothetical unit
   d. 5.5 hypothetical units
   e. 10 hypothetical units

44. When nonlethal effects of chemicals are studied, such as a chemical having neurotoxic attributes, the dose that causes 50% of the individuals to display the effect is known as the
   a. SL50
   b. SE50
   c. SLE50
   d. LD50
   e. ED50

45. The U.S. legislation that provides for the regulation of many chemicals by the EPA, not including pesticides, food, and cosmetics, is the
   a. Clean Water Act
   b. Toxic Substances Control Act of 1976
   c. Federal Insecticide, Fungicide, and Rodenticide Act of 1996
   d. Registration, Evaluation & Authorization of Chemicals Act
   e. Clean Air Act

46. A study was conducted on a new herbicide and the ED50 for mice was determined to be 40 mg/kg. What would be the concentration deemed "safe for humans" by the EPA?
   a. 40 mg/kg
   b. 20 mg/kg
   c. 4 mg/kg
   d. 0.2 mg/kg
   e. 0.04 mg/kg

47. A study focusing on the long term effects of a chemical on the reproduction of trout would be categorized as a/n
   a. prospective study
   b. chronic study
   c. ED50 study
   d. acute study
   e. retrospective study

48. The nuclear accident at Chernobyl in 1986 has provided scientists with data on the effects of radiation on humans. This study of radiation sickness and thyroid cancers would be best classified as a/n
   a. retrospective study
   b. chronic study
   c. acute study
   d. prospective study
   e. LD50 study

49. Lifestyle choices such as smoking or alcohol consumption can best be studied as
    a. ED50 studies
    b. chronic studies
    c. acute studies
    d. prospective studies
    e. retrospective studies

50. Asbestos exposure is more dangerous to individuals who smoke cigarettes. This is due to
    a. the bioaccumulation of asbestos in the lungs
    b. the synergistic interactions between the two risks
    c. the high LD50 of asbestos
    d. the solubility of asbestos in the bloodstream
    e. the biomagnification of the chemicals in tobacco

51. Which of the following best describes chemicals in the environment that are fat-soluble?
    a. They are never subject to biomagnification.
    b. They are easily excreted by animals in their urine.
    c. They are prevalent in benthic soils that underlie bodies of water.
    d. They are deposited via acid deposition.
    e. They are prevalent in surface waters.

52. A phytoplankton is continually exposed to an oil-soluble chemical. Over time, the concentration of the chemical within the phytoplankton increases. This is an example of
    a. PCB persistence
    b. synergistic properties
    c. biomagnification
    d. bioaccumulation
    e. synergistic interactions

53. In an estuary a zooplankton consumes a phytoplankton with a small globule of PCBs attached to it. A fish consumes the zooplankton as well as many other zooplankton. A larger fish consumes the small fish and then a gull consumes the larger fish. The increased concentration of the chemical at the top of the food chain is an example of
    a. biomagnification
    b. bioaccumulation
    c. synergistic properties
    d. PCB persistence
    e. synergistic interactions

54. A most famous case of biomagnification is
    a. the dead zone in the Gulf of Mexico
    b. the Bhopal India pesticide accident
    c. DDT and the decline of fish-eating birds
    d. atrazine and the loss of amphibian species
    e. thalidomide and the babies affected by it

55. Malathion is an insecticide that is fairly widely used in the United States, with a half-life in the environment of 1 day. If 100 grams of malathion are released into the environment, about how much will remain after 4 days?
    a. 100 g
    b. 50 g
    c. 25 g
    d. 12.5 g
    e. 6.25 g

Table 17-3

Deaths attributable to five environmental risks, and to all five risks combined by region, 2004			
Risk	**World**	**Low and Middle income**	**High Income**
Percentage of deaths			
Indoor smoke from solid fuels	3.3	3.9	0.0
Unsafe water, sanitation, hygiene	3.2	3.8	0.1
Urban outdoor air pollution	2.0	1.9	2.5
Global climate change	0.2	0.3	0.0
Lead exposure	0.2	0.3	0.0
All five risks	**8.7**	**9.6**	**2.6**

56. Use Table 17-3. Which of the following is the most correct statement regarding the risk of death from air pollution?
    a. The risk of death due to anthropogenic carbon emissions is the same for developed countries as it is for developing countries.
    b. The risk of death due to air pollution for developed countries is the same as the risk for developing countries.
    c. The risk of death due to urban outdoor air pollution is greater for developed countries than developing countries.
    d. The risk of death due to indoor air pollution is greater for developed countries than developing countries.
    e. The risk of death due to urban air pollution is less for developed countries than developing countries.

57. Use Table 17-3. Which of the following would have the greatest effect on reducing the risk of death due to the environmental causes listed in the figure?
    a. The use of portable water purifying systems.
    b. Education programs on communicable diseases.
    c. The use of insecticide embedded mosquito nets.
    d. Legislation on vehicular emissions
    e. Replacing lead in existing plumbing.

58. Which of the following represents an environmental hazard?
    I. UV radiation
    II. pregnancy
    III. arsenic
    a. I
    b. III
    c. I and II
    d. I and III
    e. I, II, and III

59. All of the following are associated with the feminization of organisms due to the presence of endocrine disruptors EXCEPT:
    a. the organisms affected are mostly aquatic
    b. the male testes occasionally produce eggs as well as sperm
    c. the males of the species develop female reproductive organs
    d. the endocrine disruptors interfere with the production of testosterone
    e. the males have higher than normal levels of estrogen

60. All of the following are correct regarding actual risk in the environment EXCEPT:
    a. often a person's perception of actual risk may not match reality
    b. measuring actual risk involves qualitative risk assessment.
    c. actual risk assessment is based on mathematical probabilities
    d. the United States keeps data on various hazards and this data is used to determine actual risk
    e. assessing actual risk involves quantitative risk assessment

61. When a chemical manufacturing company develops a chemical, extensively tests it, discovers it to be unsafe, and never brings it to market, it is following the
    a. precautionary principle
    b. actual risk probability principle
    c. risk management principle
    d. risk assessment and management principle
    e. innocent-until-proven-guilty principle

62. Which international agreement placed restriction on a list of 12 chemicals, known as "the dirty dozen?"
    a. the Montreal Protocol of 1987
    b. the REACH Convention of 2007
    c. the Cairo Convention of 1994
    d. the Kyoto Accord of 1997
    e. the Stockholm Convention of 2001

63. What disease is caused by mutated bovine prions?
    a. bubonic plague
    b. malaria
    c. ebola
    d. mad cow disease
    e. tuberculosis

64. Which of the following is an example of a biological risk?
    a. earthquake
    b. pregnancy
    c. malaria
    d. arsenic
    e. alcohol

65. What is the cause of bubonic plague?
    a. radon
    b. malnutrition
    c. *Mycobacterium tuberculosis*
    d. Ebola virus
    e. *Yersinia pestis*