Biology 112 – Introduction to Ecology

Session:	Spring 2011
Section:	51569 3 Units
Class Location:	NVC 838
Days / Time:	W 6:00 PM – 8:50 PM
Instructor:	RIDDELL

Practice Midterm Exam

Raven, Berg, Hassenzahl: Environment, 7th Edition
Chapter 20: Air Pollution

1. Which of the following is believed to be the greatest cause of air pollution in Southeast Asia?
   a) automobile exhaust
   b) agricultural fires
   c) tobacco smoke
   d) CFCs
   e) industrial waste

   Ans: b
   Difficulty: Easy
   Response:
   Chapter Opener; 20.0

2. The two atmospheric gases most important to humans and other organisms are:
   a) carbon dioxide and oxygen
   b) hydrogen and oxygen
   c) oxygen and argon
   d) carbon dioxide and nitrogen
   e) carbon monoxide and oxygen

   Ans: a
   Difficulty: Easy
   Response:
   The Atmosphere as a Resource; 20.1

3. The most abundant gas in the Earth's atmosphere is:
   a) argon
   b) carbon dioxide
   c) hydrogen
   d) nitrogen
   e) oxygen

   Ans: d
   Difficulty: Easy
   Response:
   The Atmosphere as a Resource; 20.1

4. Fine solid and/or liquid droplets suspended in the air are known as:
   a) primary air pollutants
   b) secondary air pollutants
   c) hydrocarbons
   d) particulate matter
   e) hazardous air pollutants

   Ans: d
   Difficulty: Easy
   Response:
   Major Classes of Air Pollutants; 20.2.1

Practice Midterm Exam

5. The stratospheric chemical that prevents much of the solar ultraviolet radiation from penetrating to Earth's surface is:
   a) carbon dioxide
   b) water vapor
   c) ozone
   d) particulate matter
   e) nitrogen oxides

   Ans: c
   Difficulty: Easy
   Response:
   Major Classes of Air Pollutants; 20.2.1

6. Urban areas receive less sunlight than rural areas, partly as a result of greater quantities of _____ in the air.
   a) ozone
   b) hydrocarbons
   c) particulate matter
   d) sulfur oxides
   e) nitrogen oxides

   Ans: c
   Difficulty: Easy
   Response:
   Major Classes of Air Pollutants; 20.2.1

7. The two main human sources of primary air pollutants are:
   a) agriculture and residential sources
   b) agriculture and industry
   c) industry and incineration
   d) industry and transportation
   e) incineration and transportation

   Ans: d
   Difficulty: Easy
   Response:
   Sources of Outdoor Air Pollution; 20.2.2

8. Automobiles and trucks do not release significant quantities of the following into the atmosphere:
   a) carbon dioxide
   b) hydrocarbons
   c) nitrogen oxides
   d) particulate matter
   e) sulfur oxides

   Ans: e
   Difficulty: Easy
   Response:
   Sources of Outdoor Air Pollution; 20.2.2

Practice Midterm Exam

9. Photochemical smog:
   a) is sometimes called London-type smog
   b) is generally worse during the winter months
   c) is formed from chemical reactions involving sunlight, nitrogen oxides and hydrocarbons
   d) is caused primarily by industrial emissions
   e) was more prevalent in the 1800s than the 1900s

   Ans: c
   Difficulty: Easy
   Response:
   Urban Air Pollution; 20.2.3

10. Industrial smog:
   a) was first described in Los Angeles
   b) caused thousands of deaths in London
   c) is formed from chemical reactions involving sunlight and hydrocarbons
   d) is much worse in the summer months
   e) is generally a more significant problem in highly-developed countries

   Ans: b
   Difficulty: Easy
   Response:
   Urban Air Pollution; 20.2.3

11. _____ is a lung disease that causes breathlessness and wheezy breathing.
   a) cataracts
   b) diabetes
   c) emphysema
   d) hepatitis
   e) meningitis

   Ans: c
   Difficulty: Easy
   Response:
   Air Pollution and Human Health; 20.3.1

12. Which air pollutant is associated with slow development and permanent effects on mental ability in children?
   a) carbon Dioxide
   b) lead
   c) nitrogen dioxide
   d) ozone
   e) radon

   Ans: b
   Difficulty: Easy
   Response:
   Air Pollution and Human Health; 20.3.1

Practice Midterm Exam

13. Electrostatic precipitators and scrubbers in smokestacks are used primarily to remove which air pollutant?
    a) particulate matter
    b) ozone
    c) carbon dioxide
    d) sulfur dioxide
    e) oxygen

    Ans: a
    Difficulty: Easy
    Response:
    Controlling Air Pollutants; 20.4.1

14. Which of the following is a method used to prevent unburned gasoline vapors from being released to the atmosphere?
    a) vapor recovery
    b) catalytic afterburners
    c) vapor isolation
    d) volatile emission treatment
    e) none of these

    Ans: a
    Difficulty: Easy
    Response:
    Controlling Air Pollutants; 20.4.1

15. Which of the following is responsible for reducing carbon monoxide emissions in auto exhaust by over 85%?
    a) fuel cells
    b) catalytic converter
    c) muffler
    d) alternator
    e) engine air filter

    Ans: b
    Difficulty: Easy
    Response:
    Controlling Air Pollutants; 20.4.1

16. Lead in the atmosphere has decreased significantly since the 1970s primarily due to:
    a) new CAFÉ standards for automobiles
    b) the invention of the catalytic converter
    c) increased use of scrubbers in coal-fired power plants
    d) the phasing out of leaded paint in buildings
    e) replacing leaded gasoline with unleaded gasoline

    Ans: e
    Difficulty: Easy
    Response:
    The Clean Air Act; 20.4.2

Practice Midterm Exam

17. Which of the following requires the average fuel economy of covered vehicles to be 35 miles per gallon by 2020?
    a) Clean Air Act (1970)
    b) Clean Air Act Amendments (1990)
    c) CAFE standards
    d) EPA Emissions testing
    e) None of these

    Ans: c
    Difficulty: Easy
    Response:
    Other Ways to Improve Air Quality; 20.4.3

18. Which U.S. state has adopted the most stringent air-quality standards, including the low carbon fuel standard?
    a) Alaska
    b) California
    c) Georgia
    d) Iowa
    e) Pennsylvania

    Ans: b
    Difficulty: Easy
    Response:
    Other Ways to Improve Air Quality; 20.4.3

19. Which of the following is the chemical formula for ozone?
    a) NO3
    b) O
    c) O2
    d) O3
    e) CO2

    Ans: d
    Difficulty: Easy
    Response:
    Ozone Depletion in the Stratosphere; 20.5

20. Where was ozone thinning first noticed?
    a) North America
    b) Europe
    c) Antarctica
    d) Arctic
    e) all of these

    Ans: c
    Difficulty: Easy
    Response:
    Ozone Depletion in the Stratosphere; 20.5

Practice Midterm Exam

21. Which of the following is a source of CFCs?
    a) pesticides
    b) insulation and packaging
    c) air conditioners
    d) fire retardants
    e) all of these

    Ans: e
    Difficulty: Easy
    Response:
    The Causes of Ozone Depletion; 20.5.1

22. Chlorofluorocarbons such as CFC-12 are released into the atmosphere by:
    a) smoke stacks
    b) car exhaust
    c) leaking air conditioners and old refrigerators
    d) pesticides
    e) nuclear power plants

    Ans: c
    Difficulty: Easy
    Response:
    Facilitating the Recovery of the Ozone Layer; 20.5.3

23. The agreement which called for a 50% reduction of CFC production by 1998 was the:
    a) Copenhagen Protocol
    b) Montreal Protocol
    c) Kyoto Protocol
    d) Boston Protocol
    e) Mexico City Protocol

    Ans: b
    Difficulty: Easy
    Response:
    Facilitating the Recovery of the Ozone Layer; 20.5.3

24. Which of the following describes the pH of natural rainfall?
    a) very acidic
    b) slightly acidic
    c) neutral
    d) slightly basic
    e) very basic

    Ans: b
    Difficulty: Easy
    Response:
    Measuring Acidity; 20.6.1

Practice Midterm Exam

25. Which of the following pH values indicates a strong base?
    a) pH=3
    b) pH=5
    c) pH=7
    d) pH=9
    e) pH=11

    Ans: e
    Difficulty: Easy
    Response:
    Measuring Acidity; 20.6.1

26. The average pH of rainfall in the northeastern United States is:
    a) < 2
    b) 3 to 4
    c) 5 to 6
    d) 8
    e) 9 to 10

    Ans: b
    Difficulty: Easy
    Response:
    Measuring Acidity; 20.6.1

27. Sulfur dioxide and nitrogen oxides react with water to produce:
    a) ozone
    b) hydrochloric acid and hydrofluoric acid
    c) sulfuric acid and nitric acid
    d) sulfur nitrate and nitrogen sulfate
    e) carbonic acid and hydrochloric acid

    Ans: c
    Difficulty: Medium
    Response:
    How Acid Deposition Develops; 20.6.2

28. Acid deposition has impacted:
    a) the Black Forest of southwestern Germany
    b) The Washington Monument in Washington, D.C
    c) tree health in the Appalachian Mountains
    d) Adirondacks of New York State
    e) all of these.

    Ans: e
    Difficulty: Easy
    Response:
    The Effects of Acid Deposition: 20.6.3

Practice Midterm Exam

29. The general symptoms of forest decline due to acid deposition may include all of the following except:
    a) reduced vigor
    b) reduced growth
    c) greening of leaves
    d) death of trees

    Ans: c
    Difficulty: Easy
    Response:
    The Effects of Acid Deposition; 20.6.3

30. A World Health Organization study determined that the leading cause of death for children worldwide is:
    a) cancer
    b) hunger
    c) obesity
    d) respiratory disease
    e) none of these

    Ans: d
    Difficulty: Easy
    Response:
    Air Pollution Around the World; 20.7

31. Which of the following is not a major contributor to the poor air quality in the Mexico City area?
    a) temperature inversions
    b) topography
    c) household heating fuels
    d) rapid population growth
    e) large number of motor vehicles

    Ans: c
    Difficulty: Easy
    Response:
    Case in Point (Air pollution in Beijing and Mexico City); 20.7.1

32. Which city currently has the worst air pollution in the world?
    a) Beijing, China
    b) Los Angeles, United States
    c) Mexico City, Mexico
    d) Tokyo, Japan
    e) London, England

    Ans: a
    Difficulty: Easy
    Response:
    Case in Point (Air pollution in Beijing and Mexico City); 20.7.1

Practice Midterm Exam

33. Dangerous levels of toxic compounds have been measured in pristine arctic regions due to the:
    a) many power plants required for power and heat in the winter
    b) migration of birds and marine animals each year
    c) global distillation effect
    d) illegal disposal of waste from urban areas
    e) none of these

    Ans: c
    Difficulty: Easy
    Response:
    Long-Distance Transport of Air Pollution; 20.7.2

34. Indoor air pollution most commonly causes:
    a) lung cancer
    b) heart attacks and strokes
    c) common ailments that resemble colds and influenza
    d) increased blood pressure
    e) greater worker productivity

    Ans: c
    Difficulty: Easy
    Response:
    Indoor Air Pollution; 20.8

35. Cigarette smoking has been definitively linked to which of the following human health concerns?
    a) heart disease
    b) emphysema
    c) strokes
    d) lung cancer
    e) all of these

    Ans: e
    Difficulty: Easy
    Response:
    Indoor Tobacco Smoke; 20.8.1

36. Radon is:
    a) a metallic element produced in nuclear power plants
    b) a naturally occurring gas produced during the radioactive decay of uranium
    c) an alpha-emitting gas that penetrates the skin naturally
    d) a secondary air pollutant resulting from photochemical smog
    e) a by-product of nuclear energy production

    Ans: b
    Difficulty: Easy
    Response:
    Radon; 20.8.2

Practice Midterm Exam

37. Harm to humans from radon is greatest:
    a) in well-insulated homes
    b) near nuclear power plants
    c) in cities
    d) outdoors
    e) in high-rise office buildings

    Ans: a
    Difficulty: Easy
    Response:
    Radon; 20.8.2

38. All of the following ecosystem services are performed by the atmosphere except:
    a) redistributing water in the hydrologic cycle
    b) providing a source of oxygen for cellular respiration in plants and animals
    c) blocking much of the ultraviolet radiation coming from the sun
    d) converting nitrate to nitrogen gas
    e) moderating the climate

    Ans: d
    Difficulty: Medium
    Response:
    The Atmosphere as a Resource; 20.1

39. The difference between primary and secondary air pollutants is that primary air pollutants:
    a) only affect plants, while secondary pollutants affect plants and animals
    b) are not harmful to humans, whereas secondary air pollutants may be toxic to humans
    c) enter the atmosphere directly, whereas secondary pollutants form from other substances released into the atmosphere
    d) are the direct result of natural processes, whereas secondary air pollutants are the result of human activity
    e) are smaller, primary molecules

    Ans: c
    Difficulty: Medium
    Response:
    Types and Sources of Air Pollution; 20.2

40. Which of the following air pollutants is correctly paired with one of its major effects?
    a) sulfur oxides — acid precipitation
    b) carbon oxides — corrosion of metal
    c) hydrocarbons — reduced visibility
    d) nitrogen oxides — blocks UV radiation
    e) particulate matter — production of photochemical smog

    Ans: a
    Difficulty: Medium
    Response:
    Major Classes of Air Pollutants; 20.2.1

Practice Midterm Exam

41. Temperature inversions:
    a) cause gases and particulate matter to remain trapped near the ground
    b) typically last for weeks at a time
    c) occur when a layer of warm air is trapped near the ground by a colder, upper layer
    d) are of greatest concern in areas with relatively flat topography
    e) all of these

    Ans: a
    Difficulty: Medium
    Response:
    Case in Point; Efforts to Reduce Ozone in Southern California; 20.2.4

42. A study of 5000 children in southern California found all of the following except:
    a) Children who play sports in high-ozone areas are more likely to develop asthma
    b) Children who breathe the most polluted air have less lung growth
    c) Children's lung development did not change when they moved to areas with less particulate air pollution
    d) Children who moved from areas of high particulate pollution to areas with lower particulate pollution showed increasing lung development
    e) none of these

    Ans: c
    Difficulty: Medium
    Response:
    Air Pollution and Human Health; 20.3.1

43. Which of the following statements about air pollution is true?
    a) Most forms of air pollution reduce the productivity of crop plants.
    b) Air pollution is dangerous to living organisms, but has little impact on inorganic materials.
    c) The release of SO2, which can be used by plants, is one example of how some forms of air pollution are beneficial.
    d) Air pollution is a problem best solved at local level since it is dependent on local industries and activities.
    e) Although it is a suspected human health hazard, air pollution has not been definitively linked to human health problems.

    Ans: a
    Difficulty: Medium
    Response:
    Effects of Air Pollution; 20.3

Practice Midterm Exam

44. The effect of carbon monoxide on humans is:
    a) eye and skin irritation
    b) a higher incidence of heart defects in infants whose mothers were exposed during pregnancy
    c) impairing gas exchange in the lungs by causing the airways to constrict
    d) irreversibly binding with hemoglobin, eliminating its ability to transport oxygen in the blood
    e) suppressing the immune system

    Ans: d
    Difficulty: Medium
    Response:
    Air Pollution and Human Health; 20.3.1

45. Air pollution has been linked to all of the following human health problems except:
    a) suppression of the immune system
    b) increased susceptibility to West Nile virus
    c) inflammation of the respiratory tract
    d) potential development of emphysema and chronic bronchitis
    e) impaired reflexes and increased drowsiness

    Ans: b
    Difficulty: Medium
    Response:
    Air Pollution and Human Health; 20.3.1

46. Air pollution is a greater health threat to children than adults because:
    a) children need more oxygen than adults
    b) children breathe more air per pound of body weight than adults
    c) children have a higher metabolic rate than adults
    d) children's lungs are still developing
    e) all of these

    Ans: e
    Difficulty: Medium
    Response:
    Air Pollution and Human Health; 20.3.1

47. All of the following are methods of controlling air pollution due to particulate matter except:
    a) catalytic afterburners
    b) scrubbers
    c) careful land-excavating activities
    d) fabric filters
    e) electrostatic precipitators

    Ans: a
    Difficulty: Medium
    Response:
    Controlling Air Pollutants; 20.4.1

Practice Midterm Exam

48. The U.S. Clean Air Act Amendments of 1990 require the:
    a) development of automobiles with lower nitrogen oxide and hydrocarbon emissions
    b) construction of more mass transit systems
    c) elimination of diesel-fueled vehicles
    d) reduction of automobile traffic
    e) reduction of air pollutants in agricultural and rural areas

    Ans: a
    Difficulty: Medium
    Response:
    The Clean Air Act; 20.4.2

49. Which of the following statements about the U.S. Clean Air Act is true?
    a) The Clean Air Act of 1970 focused on about 200 air pollutants.
    b) The most dramatic improvement in air quality has been a reduction in lead in the atmosphere.
    c) Sulfur dioxide emissions since 1970 have been reduced by over 90%.
    d) The Clean Air Act was passed in 1970, but has not been updated since then.
    e) Urban areas have done the best job of meeting the standards for clean air.

    Ans: b
    Difficulty: Medium
    Response:
    The Clean Air Act; 20.4.2

50. Which ozone-depleting chemical is not matched with its proper use?
    a) chlorofluorocarbons - pesticide
    b) halons - fire extinguishers
    c) methyl chloroform - industrial solvent
    d) carbon tetrachloride - industrial manufacturing
    e) methyl bromide - pesticide

    Ans: a
    Difficulty: Medium
    Response:
    The Causes of Ozone Depletion; 20.5.1

51. Which of the following is not linked to overexposure of UV radiation due to ozone thinning?
    a) eye cataracts
    b) sterility
    c) skin cancer
    d) weakened immunity
    e) ecosystem disruption

    Ans: b
    Difficulty: Medium
    Response:
    The Effects of Ozone Depletion; 20.5.1

Practice Midterm Exam

52. In the absence of air pollution control devices, which of the following is the most significant source of sulfur dioxide?
    a) refrigeration and air conditioning
    b) coal-burning power plants
    c) motor vehicles
    d) fertilizers
    e) fire retardants

    Ans: b
    Difficulty: Medium
    Response:
    How Acid Deposition Develops; 20.6.2

53. Which of the following is not an effect of acid deposition?
    a) destruction of monuments and buildings
    b) decreased hatching success in some birds
    c) forest decline
    d) mutations and skin cancer
    e) decline in aquatic animal populations

    Ans: d
    Difficulty: Medium
    Response:
    The Effects of Acid Deposition; 20.6.3

54. Mexico City has attempted to improve its air quality by:
    a) switching to all hybrid vehicles
    b) prohibiting smoking in public areas
    c) increasing gas exports to the United States
    d) replacing buses and taxis with a clean, non-polluting mass transit system
    e) requiring residents to buy new cars

    Ans: d
    Difficulty: Medium
    Response:
    Case in Point (Air Pollution in Beijing and Mexico City); 20.7.1