**APES Study Guide**

**Unit 7: POLLUTION**

***DUE****: Due on day of unit test.*

*Directions:**Answer each question in complete sentences.* ***Must be handwritten in order to receive credit.***

**Textbook Reference:**

Chapter 18 – Air Pollution

Chapter 20 – Water Pollution

Chapter 21 – Solid & Hazardous Waste

**Vocabulary:**

*Directions: Review key vocabulary, words may appear in quizzes and/or tests. You are not required to write the definitions but are encouraged to review.*

Chapter 18

acid deposition

air pollution

atmospheric pressure

carbon oxides

industrial smog

nitrogen oxides

nitric acid

ozone

ozone layer

particulates

photochemical smog

primary pollutants

secondary pollutants

stratosphere

sulfur dioxide

sulfuric acid

temperature inversion

troposphere

volatile organic compounds (VOCs)

Chapter 20

cultural eutrophication

eutrophication

nonpoint sources

point sources

primary sewage treatment

secondary sewage

treatment

septic tank

water pollution

Chapter 21

Biomimicry

environmental justice

hazardous (toxic) waste

industrial solid waste

integrated waste management

municipal solid waste

open dump

primary recycling

recycle

reduce

reuse

sanitary landfills

secondary recycling

solid waste

waste management

waste reduction

**Study Guide Questions (SGQ):**

*Directions:**Answer each question in your own words as you read through the text. Answers must be in* ***complete handwritten sentences.***

Chapter 18

1. Describe the major differences between the troposphere and stratosphere.
2. What is air pollution?
3. Distinguish between primary pollutants and secondary pollutants and give an example of each.
4. Describe the effects of lead as a pollutant and how we can reduce our exposure to this chemical.
5. Describe a chemical method and a biological method for detecting air pollutants.
6. Distinguish between industrial smog and photochemical smog in terms of their chemical composition and formation.
7. What is a temperature inversion and how can it affect air pollution levels?
8. What is acid deposition and how does it form? What are its major environmental impacts on vegetation, lakes, human-built structures, and human health.
9. List three major ways to reduce acid deposition.
10. What is the major indoor air pollutant in many developing countries?
11. What are the top four indoor air pollutants in the United States?
12. Describe indoor air pollution by radon- 222 and what can be done about it.
13. Briefly describe the human body’s defenses against air pollution, how they can be overwhelmed, and the illnesses that can result.
14. Approximately, how many people die prematurely from air pollution each year in the world and in the United States? What percentage of these deaths are caused by indoor air pollution?
15. Describe air pollution laws in the United States.
16. Summarize the positive effects of such laws and discuss how the laws can be improved.
17. List the advantages and disadvantages of using an emissions trading program.
18. Summarize the major ways to reduce emissions from power plants and motor vehicles.

Chapter 20

1. Distinguish between point sources and nonpoint sources of water pollution, and give an example of each. List nine major types of water pollutants and give an example of each. List three diseases transmitted to humans by polluted water. Describe chemical and biological methods that scientists use to measure water quality.
2. Describe how streams can cleanse themselves and how these cleansing processes can be overwhelmed.
3. Compare the state of stream pollution in more-developed and less-developed countries.
4. Give two reasons why lakes cannot cleanse themselves as readily as streams can.
5. List ways to prevent or reduce cultural eutrophication.
6. Explain why groundwater cannot cleanse itself very well.
7. What are the major sources of groundwater contamination in the United States?
8. Describe the threat from arsenic in groundwater.
9. List ways to prevent or clean up ground-water contamination.
10. Describe three ways to provide safe drinking water in poor countries.
11. Describe U. S. laws for protecting drinking water quality.
12. Describe the environmental problems caused by the wide-spread use of bottled water.
13. How are coastal waters and deeper ocean waters polluted?
14. What causes harmful algal blooms and what are their negative effects?
15. How serious is oil pollution of the oceans, what are its effects, and what can be done to reduce such pollution?
16. List ways to reduce water pollution from (a) non-point sources and (b) point sources.
17. Describe the U. S. experience with reducing point-source water pollution.
18. What is a septic tank and how does it work?
19. Describe how primary sewage treatment and secondary sewage treatment are used to help purify water.
20. What are the options for dealing with sewage sludge?
21. What is a composting toilet system?
22. Describe how we can use wetlands to treat sewage.
23. List six ways to prevent or reduce water pollution.

Chapter 21

1. Distinguish among solid waste, industrial solid waste, municipal solid waste (MSW), and hazardous (toxic) waste and give an example of each.
2. Give two reasons for sharply reducing the amount of solid and hazardous waste we produce.
3. Describe the production of solid waste in the United States and what happens to it.
4. What is garbology and how might it help us to deal with MSW?
5. Distinguish among reducing, reusing, and recycling in dealing with the waste we produce.
6. Describe six ways in which industries and communities can reduce resource use, waste, and pollution.
7. Distinguish between primary (closed- loop) and secondary recycling, and give an example of each.
8. What is a materials-recovery facility?
9. What is composting?
10. Describe the recycling of paper and the problems involved.
11. Describe the recycling of plastics and the problems involved.
12. Describe progress being made in the recycling of plastics.
13. What are the major advantages and disadvantages of recycling?
14. What are the major advantages and disadvantages of using incinerators to burn solid and hazardous waste?
15. Distinguish between open dumps and sanitary landfills.
16. What are the major advantages and disadvantages of burying solid waste in sanitary landfills?
17. Discuss the problems involved in sending e-wastes to some less-developed countries for recycling.
18. What are some ways to do responsible e-waste recycling?
19. Describe three ways to detoxify hazardous waste.
20. What is bioremediation? What is phytoremediation?
21. What are the major advantages and disadvantages of incinerating hazardous wastes?
22. What are the major advantages and disadvantages of disposing of liquid hazardous wastes in (a) deep under-ground wells and (b) surface impoundments?
23. What is a secure hazardous waste landfill?
24. Describe the regulation of hazardous waste in the United States under the Resource Conservation and Recovery Act and the Comprehensive Environmental Response, Compensation, and Liability (or Superfund) Act.
25. What is a brownfield?
26. What is environmental justice and how well has it been applied in locating and cleaning up hazardous waste sites in the United States?
27. Describe regulation of hazardous wastes at the global level through the Basel Convention and the treaty to control persistent organic pollutants (POPs).