

Chapter 21 – Review Questions

Read Chapter 21 and answer the following questions on a separate sheet of paper.

ANSWERS MUST BE HANDWRITTEN! Typed responses will not be accepted.

1. Describe John Todd's living machines used to purify sewage.
2. What is *water pollution*? Distinguish between *point* and *nonpoint sources* of water pollution, and give two examples of each type. Which type is easier to control? Why? What are the three major sources of water pollution?
3. What are seven types of water pollutants, and what are the major sources and effects of each type? Describe how *coliform bacteria counts*, measurements of *dissolved oxygen*, *chemical analysis*, and *indicator species* can be used to determine water quality.
4. What are the common diseases transmitted to people through drinking water contaminated with (a) bacteria, (b) viruses, (c) parasitic protozoa, and (d) parasitic worms?
5. What are the major water pollution problems of streams? Describe how streams can handle limited loads of biodegradable wastes. What is an *oxygen sag curve*?
6. Summarize good and bad news about attempts to prevent or control stream pollution in (a) developed countries and (b) developing countries.
7. Describe how religious beliefs, cultural traditions, poverty, and a large population interact to cause severe water pollution of the Ganges River in India.
8. List two reasons why dilution of pollution often is less effective in lakes than in streams.
9. Distinguish between *eutrophication* and *cultural eutrophication*. What are the major causes of cultural eutrophication? List three methods for preventing cultural eutrophication and three methods for cleaning cultural eutrophication. Describe Lake Washington's recovery from severe cultural eutrophication.
10. Summarize the good and bad news about attempts to reduce water pollution in the Great Lakes,
11. List five major sources of groundwater contamination. List three reasons why groundwater pollution is such a serious problem.
12. List three examples indicating the seriousness of groundwater pollution. List six ways to prevent and three ways to clean up groundwater pollution.
13. List five major sources of ocean pollution. Why are most ocean pollution problems found in coastal areas?
14. According to the EPA, what percentage of *estuaries* are threatened or impaired?
15. Summarize the major pollution problems of the Chesapeake Bay and the progress made in dealing with these problems.
16. Describe how oxygen-depleted zones form and where they are found in the world.

17. What are the major sources of oil pollution in the world's oceans? Summarize the major effects of oil on ocean ecosystems. Describe mechanical and chemical methods for cleaning up oil spills. Discuss the limitations of cleaning up oil pollution. What is a good way to reduce the frequency, and the effects, of spills from oil tankers?
18. List eight ways to prevent and four ways to reduce pollution of coastal waters.
19. List four ways to help prevent water pollution from agricultural nonpoint sources.
20. Explain how the United States and most developed countries have reduced water pollution from point sources by enacting laws.
21. Distinguish among *septic tanks*, *primary sewage treatments*, and *secondary sewage treatment* as ways to reduce water pollution,
22. List ways to deal with the sludge produced by waste treatment methods. Discuss the controversy over using sewage sludge to fertilize crops. List two ways to prevent toxic and hazardous wastes from reaching sewage treatment plants.
23. Describe the use of wetlands to treat sewage based on working with nature.
24. Give good and bad news about the U.S. efforts to reduce water pollution. List four ways in which environmental scientists believe water pollution controls laws in the United States should be strengthened. List three reasons why there is opposition to such changes.
25. How is urban drinking water purified in developed countries? List three low-tech ways in which drinking water is purified in developing countries.
26. How is the quality of drinking water protected in the United States? How successful have these efforts been? List three suggestions made by environmental and health scientists for strengthening the U.S. Safe Drinking Water Act and four suggestions made by opponents for weakening the act.
27. List the pros and cons of drinking bottled water.
28. List nine ways to emphasize *pollution prevention* by preventing pollutants from reaching aquatic systems in the first place.
29. List eight things you can do to help reduce water pollution.