

# Chapter 19 – Review Questions

Read Chapter 19 and answer the following questions on a separate sheet of paper.

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

1. How can lichens be used to detect air pollutants?
2. Distinguish among *atmosphere*, *troposphere*, and *stratosphere*. What is *atmospheric pressure*? What key role does the stratosphere play in maintaining life on the earth?
3. Distinguish among *air pollution*, *primary pollutants*, *secondary pollutants*, and *stationary* and *mobile* sources of pollution.
4. List seven major classes of pollutants found in outdoor air. Describe the controversy over whether carbon dioxide should be classified as an air pollutant.
5. Briefly describe the history of air pollution in Europe and the United States.
6. What is *industrial smog*, and how does it form? What are the causes of the *Asian brown cloud*, and what are some of its harmful effects?
7. What is *photochemical smog*, and how does it form?
8. List five factors that can reduce air pollution and six factors that can increase air pollution.
9. What is a *temperature inversion*, and what are its harmful effects? What types of places are most likely to suffer from prolonged temperature inversions of each type?
10. What is *acid deposition*, and what are its major components and causes? Distinguish among *acid rain*, *wet deposition*, and *dry deposition*. Why is acid deposition a regional problem, and what areas tend to be most affected by it?
11. What is a *buffer*, and what types of geologic areas can neutralize or buffer some inputs of acidic chemicals? What two types of areas are most sensitive to acid deposition?
12. What continent and country have the highest levels of acid deposition?
13. What are the major harmful effects of acid deposition on (a) human health, (b) materials, (c) aquatic systems, (d) soils, and (e) trees and other plants?
14. How serious a problem is acid deposition in the United States?
15. Why is controlling acid deposition politically difficult?
16. List eight ways to prevent acid deposition and two ways to clean it up.
17. How serious is indoor air pollution, and what are some of its sources? What is the *sick-building syndrome*? According to the EPA, what are the four most dangerous indoor air pollutants in developed countries? What is the most dangerous indoor air pollutant in most developing countries?
18. Summarize the problems of indoor pollution from each of formaldehyde and radioactive radon gas.

19. List four defenses of your body against air pollution. What are the major harmful health effects of breathing air pollutants?
20. About how many people die prematurely each year from exposure to air pollutants in the United States? In the world? What percentage of these deaths is the result of indoor air pollution?
21. What is the Clean Air Act, and how has it helped reduce outdoor air pollution in the United States? Distinguish among *national ambient air quality standards*, *primary standards*, and *secondary standards*.
22. Summarize the good news and bad news about the effectiveness of the Clean Air Act in reducing outdoor air pollution in the United States.
23. According to environmental and health scientists, what are nine weaknesses of the current Clean Air Act in the United States?
24. What is an *emissions trading policy*, and what are the advantages and disadvantages of this approach to help reduce air pollution?
25. List the major prevention and cleanup methods for dealing with air pollution from (a) emissions of sulfur oxides, nitrogen oxides, and particulate matter from stationary sources, (b) motor vehicle emissions, (c) indoor air pollution in developed countries, and (d) indoor air pollution in developing countries.
26. What are six ways in which you can reduce your exposure to indoor air pollution?
27. Why do environmental and health scientists believe that we must now put much greater emphasis on preventing air pollution? List four ways each to prevent outdoor and indoor air pollution.