




6.2 Using Resources Wisely

Lesson Objectives

-  Describe how human activities affect soil and land.
-  Describe how human activities affect water resources.
-  Describe how human activities affect air resources.

Lesson Summary

Soil Resources Soil is a renewable resource, but it must be managed properly.

- ▶ **Soil erosion** is the wearing away of surface soil by water and wind.
- ▶ In dry climates, farming and overgrazing change farmland into deserts, a process called **desertification**.
- ▶ **Deforestation** is loss of forests. Because healthy forests hold soil in place, deforestation increases erosion.
- ▶ Sustainable uses include leaving stems and roots of previous crops in place, crop rotation, contour plowing, terracing, selectively harvesting mature trees, and tree farms.

Freshwater Resources The amount of fresh water is limited, and some sources cannot be replaced.

- ▶ A **pollutant** is a harmful material that can enter the biosphere. Water pollutants come from industrial chemicals, residential sewage, and other sources.
- ▶ Many chemical pollutants become concentrated in organisms at higher trophic levels of the food chain through **biological magnification**.
- ▶ Sustainable uses include conservation, pollution control, and watershed protection.

Atmospheric Resources Clean air is important to human health and Earth's climate. Pollution reduces air quality.

- ▶ **Smog** is a mixture of chemicals formed from emissions from cars and industry.
- ▶ Burning fossil fuels releases compounds that join with water in air, forming **acid rain**.
- ▶ Greenhouse gases, such as carbon dioxide and methane, can cause global warming.
- ▶ Particulates are microscopic particles that cause health problems.
- ▶ One way of sustaining air quality is controlling automobile emissions.

Soil Resources

1. What is topsoil?

2. How does topsoil form?

3. What is soil erosion?

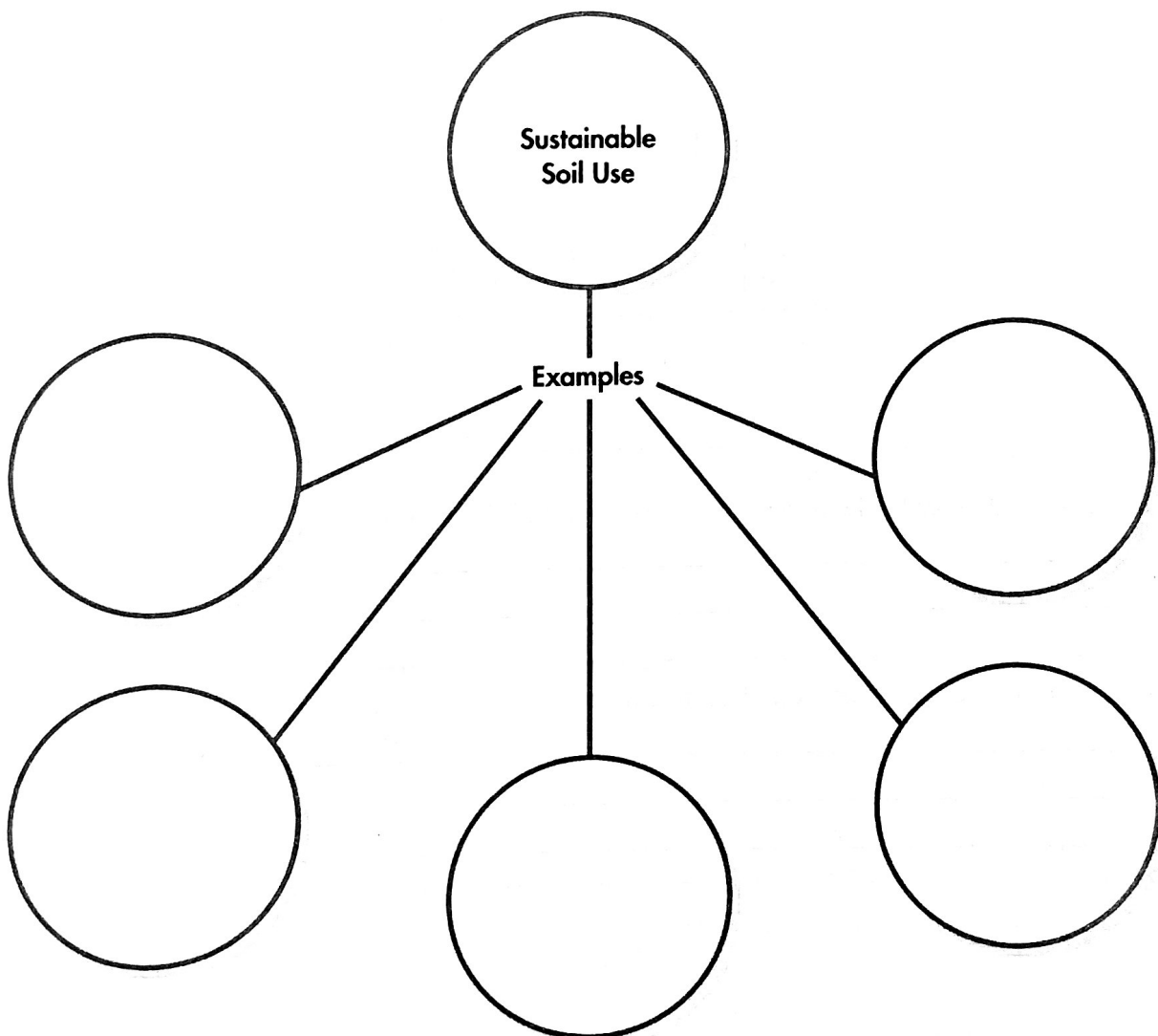
4. How does plowing land increase the rate of soil erosion?

5. What happens to farmland during desertification?

6. Are mature forests a renewable resource? Why or why not?

7. What happens to soil when rain forest is cut down?

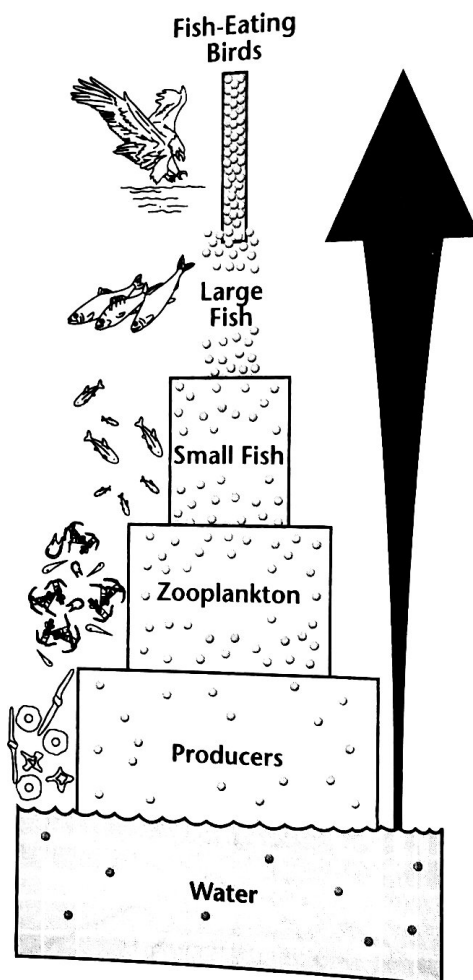
8. Complete the graphic organizer to give examples of sustainable uses of soil.



Freshwater Resources

Use this diagram to answer Questions 9–11.

9. **THINK VISUALLY** The diagram shows the typical impact of a chemical pollutant in an aquatic ecosystem.



10. Name and describe the process that this diagram is illustrating.

11. Describe an example of biological magnification.

12. What is a "dead zone," and what is its cause?

13. Why is watershed management important to maintaining good water quality in a large river or lake?

Atmospheric Resources

For Questions 14–17, write the letter of the correct answer on the line at the left.

- _____ 14. Which is the name for the mixture of chemicals that forms as a gray-brown haze in the atmosphere?
- | | |
|---------|--------------|
| A. dust | C. ozone |
| B. smog | D. radiation |
- _____ 15. Which component of acid rain kills plants and harms soil?
- | | |
|-----------------------------|------------------------------|
| A. carbon dioxide and water | C. nitric and sulfuric acids |
| B. CFCs and fossil fuels | D. ozone and particulates |
- _____ 16. Which is the name for the bits of ash and dust put into the air by certain kinds of diesel engines?
- | | |
|------------------|---------------------|
| A. particulates | C. ozone layer |
| B. precipitation | D. greenhouse gases |
- _____ 17. Which is a pollutant of soil and water that is now dropping steadily due to laws that affected the automobile industry?
- | | |
|-----------|-------------|
| A. carbon | C. nitrogen |
| B. lead | D. ozone |

Apply the Big Idea

18. The citizens of Ecotown want to protect the quality of their soil, fresh water, and air. Suggest a plan for Ecotown that includes steps for achieving sustainable use of each of those three categories of resources.
