

## 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?

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2. How does topsoil form?

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3. What is soil erosion?

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

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5. What happens to farmland during desertification?

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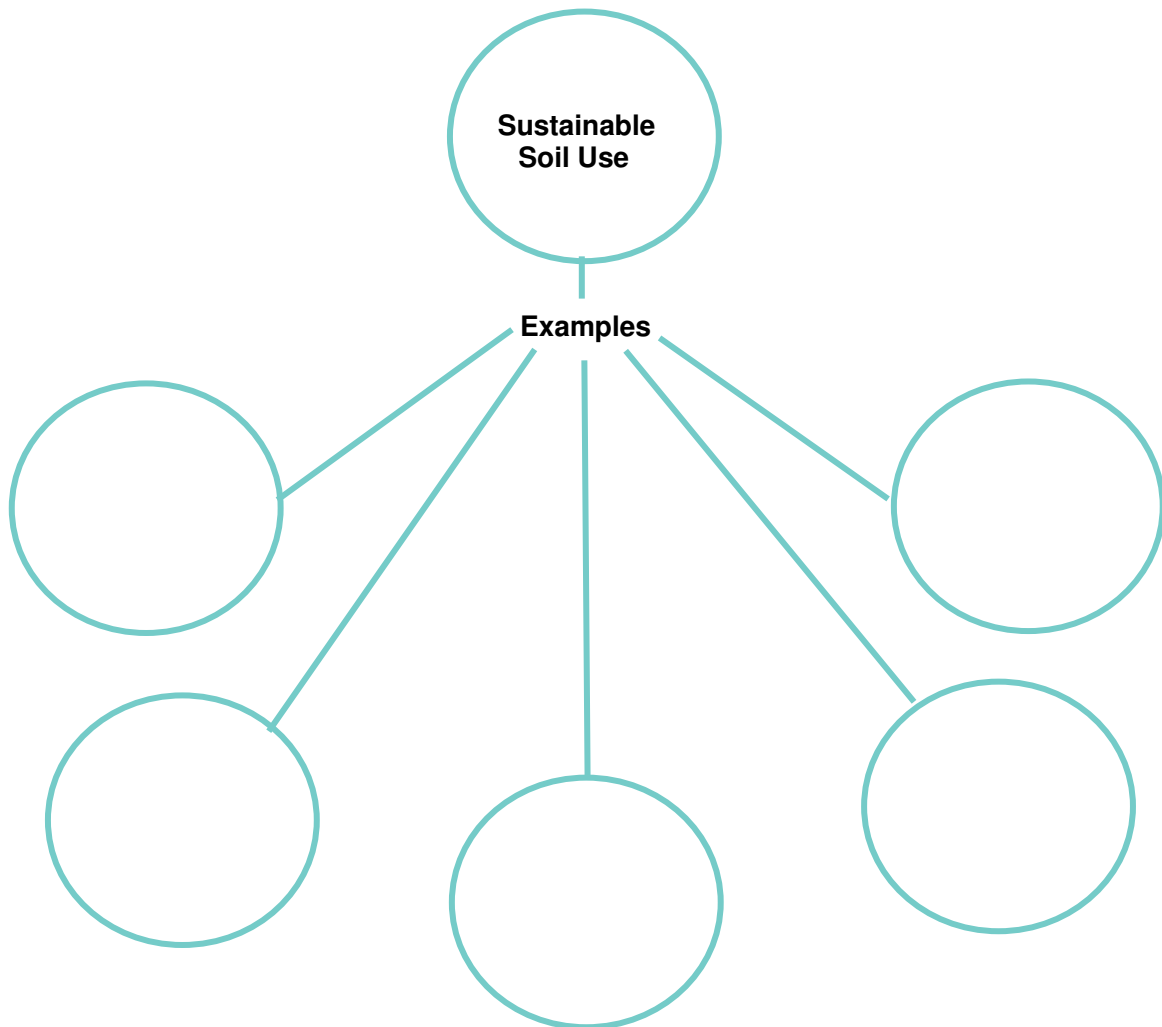
6. Are mature forests a renewable resource? Why or why not?

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

\_\_\_\_\_

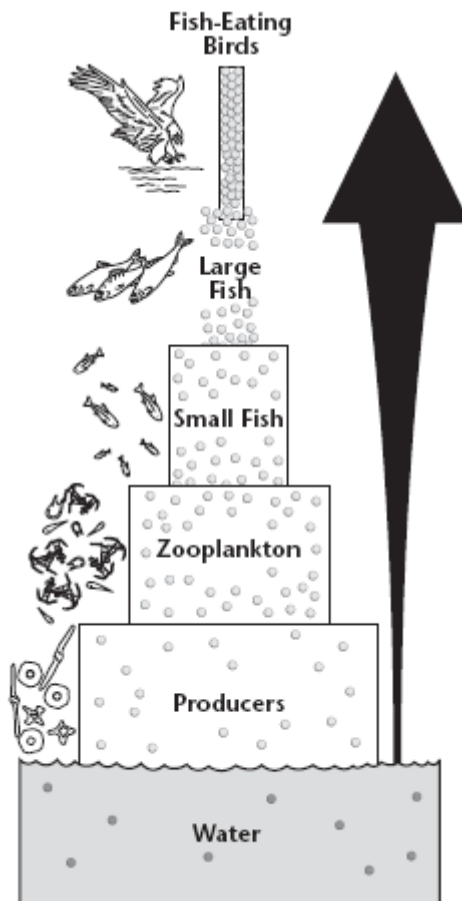
8. Complete the graphic organizer to give examples of sustainable uses of soil.



## 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.

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11. Describe an example of biological magnification

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**12.** What is a “dead zone,” and what is its cause?

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

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## 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?

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|----------------|---------------------|
| <b>A.</b> dust | <b>C.</b> ozone     |
| <b>B.</b> smog | <b>D.</b> radiation |

\_\_\_\_\_ **15.** Which component of acid rain kills plants and harms soil?

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|------------------------------------|-------------------------------------|
| <b>A.</b> carbon dioxide and water | <b>C.</b> nitric and sulfuric acids |
| <b>B.</b> CFCs and fossil fuels    | <b>D.</b> 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?

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|-------------------------|----------------------------|
| <b>A.</b> particulates  | <b>C.</b> ozone layer      |
| <b>B.</b> precipitation | <b>D.</b> greenhouse gases |

\_\_\_\_\_ **17.** Which is a pollutant of soil and water that is now dropping steadily due to laws that affected the automobile industry?

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|------------------|--------------------|
| <b>A.</b> carbon | <b>C.</b> nitrogen |
| <b>B.</b> lead   | <b>D.</b> 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.

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