

Chapter 16**ENRICHMENT****• Climatic Changes****Climate and Extinction**

About 65 million years ago, at the end of the Cretaceous period, the dinosaurs became extinct. But they were not the only species to become extinct at that time. Up to 70 percent of all the species alive disappeared. Because so many different kinds of organisms died out, scientists do not think the cause was specific to dinosaurs, such as a disease. They think there was a general change in the environment. Climate, especially temperature, is the most important influence on species existence.

During the Age of Dinosaurs, from 240 million to 65 million years ago, Earth's climate was generally mild. Glaciers melted and ocean temperatures rose. Mountain ranges in North America and Europe eroded. A warm, shallow sea covered much of the interior of western and southern North America. A warm, shallow ocean flowed around Earth near the equator, and its currents warmed the land. The continents were closer together and nearer to the equator than they are now.

The climate of the continents began to change as they drifted apart. By the end of the Age of

Dinosaurs, the level of the oceans began to drop and the seas drained away from the land. Temperatures in the ocean went down. Many species died out when the temperature fell. Almost all the reptiles that lived in the ocean died out at this time. So did 90 percent of the plankton, tiny floating organisms that make up an important source of food to many sea animals. Many shelled sea creatures disappeared as the shrinking ocean reduced their shallow-water habitat.

Large amounts of volcanic activity also took place in the Age of Dinosaurs. Volcanic ash and dust in the atmosphere from this activity may have lowered Earth's temperature by blocking sunlight. It may have also affected Earth's climate by changing the composition of the atmosphere. This change may have increased the amount of solar radiation the atmosphere absorbed. This could have heated the atmosphere, creating a thermal imbalance and unstable weather conditions. The resulting change in Earth's environment could have affected organisms living at that time.

1. What was the climate like during the Age of Dinosaurs? _____

2. How did the climate change from the beginning of the Age of Dinosaurs to the end? _____

3. What are some factors that affected the climate during the Age of Dinosaurs? _____

Chapter 16**ENRICHMENT**

Text Pages 470-475

• How Can Global Warming Be Slowed?

Greenhouse Gases

Many scientists think that the increase in greenhouse gases began in the nineteenth century after the Industrial Revolution. The burning of fossil fuels and trees has raised the levels of carbon dioxide in the atmosphere by 25 percent since 1860. During the 1980s, the world's nonindustrialized nations accounted for only 20 percent of carbon dioxide emissions. Among the industrialized nations, the United States led with 26 percent, followed by the Soviet Union with 21 percent, Western Europe with 17 percent, China with 11 percent, and Japan with 5 percent.

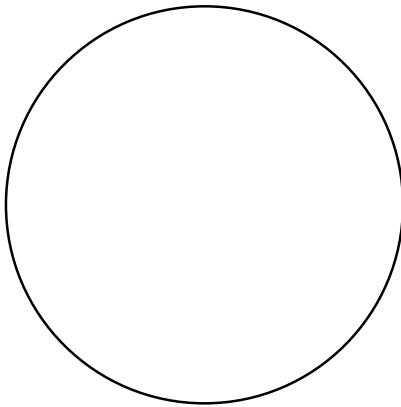
Amounts of other greenhouse gases increased, too. Methane is produced when dead things decay. It comes from feed lots, swamps, garbage,

mining, and petroleum production. Although it is not as abundant as carbon dioxide, it is much more effective as a heat-trapping gas. Nitrous oxide is released whenever nitrogen-based fertilizers are used. Chlorofluorocarbons, as you know from Chapter 14, are human-made gases that are even more effective than methane for trapping heat.

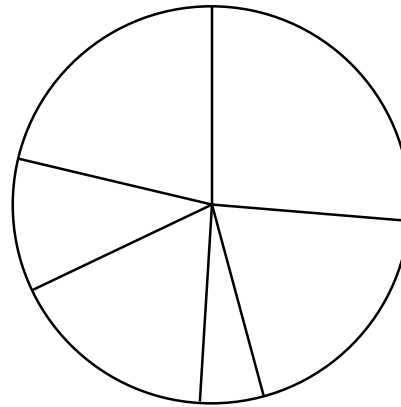
During the 1980s, more than half of the gases added to the atmosphere came from the production and use of fossil fuels for energy. Other industrial uses added 3 percent. Changes in land use such as burning forests contributed 9 percent, and agricultural practices accounted for 14 percent. Activities using chlorofluorocarbons added 17 percent.

Draw and label two pie graphs in the circles below. The information in the above paragraphs will give you the percentages you need. Then answer the question.

Contributions to greenhouse gases in the 1980s by human activity



Contributions to greenhouse gases in the 1980s by nations



Upon which nations will the burden of reducing emissions of greenhouse gases fall and why?
