

## CLEAN AIR AND SMOG

The unique atmosphere cycle of the Earth today is truly a marvel of design (see figure 7.9). Note that our air is kept breathable through active geologic, chemical, and biologic processes. We are currently adding to this cycle by the burning of the fossil fuels coal, oil, and gas. The carbon in these fuels recombines with oxygen to produce carbon dioxide (CO<sub>2</sub>) and other components of the smog so familiar to residents of Los Angeles and other heavily urbanized and industrial areas.

The short-range effect of this smog is very uncomfortable to those living in these areas. The long-range effect may include a rise in the average temperature at the surface of the Earth through what is known as the "greenhouse effect." The Sun's visible light rays are able to penetrate the blanket of smog and are partially converted into invisible heat (infrared) rays as the surface of the Earth is heated. As the infrared heat rays are radiated back into the atmosphere, they are absorbed by the carbon dioxide molecules and reflected back to Earth. This same effect is observed in a greenhouse in which the glass in the greenhouse may be thought of as analogous to the carbon dioxide molecules in the atmosphere. The same effect can also be observed in a car that has its windows shut on a sunny day. The

FIGURE 7.9

Photosynthesis and respiration in the atmosphere and oceans far outweigh other inputs and outputs. Even if all photosynthesis were to stop, the oxygen supply in the atmosphere would last more than 2000 years. (From *Earth*, 3rd ed., by F. Press and R. Siever. W. H. Freeman and Co., Copyright © 1978.)

