

Global Warming

It may be the single greatest problem we face. Some have compared its possible consequences to the aftermath of nuclear war. And some form of it may be inevitable.

The problem is global warming, a gradual rise in the temperature of the Earth itself, caused by gases we are pumping into the atmosphere. A temperature rise of just 4 degrees Centigrade could melt the polar ice caps, flooding huge areas. Changing weather patterns could turn forests to grasslands, grasslands to deserts. Coastal cities would be submerged, major agricultural regions would be devastated, the weather would turn more violent.

No one can say for certain whether these changes will actually occur, or how severe they will be. Global climate is extremely difficult to predict. But the scientific theory is simple.

Our atmosphere contains a number of "trace" gases, present in very low concentrations. The most important is carbon dioxide. Carbon dioxide has a special property: it traps heat that otherwise would radiate out into space, much like the glass in a greenhouse. Hence the name "greenhouse effect." Without some carbon dioxide in our air, the Earth would cool to well below freezing.

The problem is having too much. Carbon dioxide results from the burning of fuels containing carbon, like petroleum, coal, natural gas or wood. One mile of driving a car, or one-half kilowatt-hour of coal-generated power, releases about a pound of carbon dioxide. Altogether, 18 billion tons are released every year. Most of the Earth's population contributes three tons per person to this total; North Americans contribute twenty tons each. Over the last century, the carbon dioxide concentration in the atmosphere has risen by 25%. At the present rate, it could double in the next century, triggering massive changes in the global climate.

In fact, carbon dioxide could increase even faster. This past century's rapid industrialization in the United States, Canada and Europe was fueled by the massive burning of coal and petroleum. If developing countries take the same route, huge amounts of carbon dioxide will be pumped into the atmosphere. China alone has 800 billion tons of coal reserves. But what other route to development can we offer, especially when North America continues to be the world's largest producer of carbon dioxide?

Carbon dioxide is not the only "greenhouse" gas. About 20% of the global warming problem comes from methane, released by decaying organic matter and leaky natural gas systems. Other industrial chemicals or pollutants are responsible for 25% of the problem. The levels of all these gases are increasing in the atmosphere, mostly as a result of human activities.