

system, suspected increases in malignant melanoma, degradation of industrial materials such as plastics and paints, and a threat to the aquatic food chain given the susceptibility of phytoplankton to UV radiation.

Assessing the Risk

The catastrophic consequences of ozone depletion and the failure of atmospheric models even to predict the ozone hole over the Antarctic are a strong driving force for international cooperation. Inaction in the face of scientific uncertainty can have profound consequences.

Scientific uncertainty does not mean we have to wait for more research to take action. We do not need to know everything in order to do anything. The relevant policy question is not whether the scientists are right but whether policy-makers can afford to be wrong...

There is no insurance policy that will provide adequate coverage should we be wrong.

B. GLOBAL WARMING

The Phenomenon

The Earth is warmed by radiation received from the sun. About 30% of the incoming radiation is reflected back into space while the remainder is absorbed by gases in the atmosphere and by the surface of the planet. The energy trapped by the gases raises the average temperature of the Earth's atmosphere. This natural and well-understood phenomenon is known as the "greenhouse effect" because of its similarity to the action of a greenhouse. The gases which exhibit this behaviour are often referred to as "greenhouse gases".

The principal natural greenhouse gases are water vapour (H_2O) and carbon dioxide (CO_2). Without them, the average air temperature at ground level would be approximately $-18^\circ C$, not the $+15^\circ C$ we experience. This natural greenhouse effect is vital to the presence of life on the Earth.

Since the onset of the Industrial Revolution, the human race has been adding to the natural occurrence of greenhouse gases in the atmosphere, at first slowly but now at an alarming rate. Although CO_2 created in burning fossil fuels such as coal, oil and gas has been the principal concern, we now know that other gases from industrial and agricultural activities (notably methane, CFCs and nitrous oxide) contribute to the greenhouse effect. Ozone depleting substances such as CFCs, the subject of this report, are considered responsible for as much as one-quarter of the extra greenhouse effect.

Although these additional greenhouse gases are increasing the potential to elevate the average temperature of the atmosphere that is, to cause "man-made global warming"—scientists cannot yet predict with certainty at what point society's activities will cause an identifiable warming, nor can they accurately determine the rate of this induced warming. Climate and weather patterns change naturally and it is difficult to separate normal shifts from human induced changes.