

THE HOLE IN THE OZONE LAYER, AND THE GREENHOUSE EFFECT

**For those who wanted to know the difference,
but where too afraid to ask**

Ozone depletion and the Greenhouse Effect are separate phenomena, although both are atmospheric problems caused by human activities. Ozone depletion takes place in the Earth's upper atmosphere, whereas the Greenhouse Effect is an unnatural warming of the lower atmosphere. The main connection is that chlorofluorocarbons (or CFCs) contribute to both ozone and greenhouse warming.

Natural levels of "greenhouse gases" in the atmosphere act like a blanket to keep Earth's temperatures at levels suitable for life. These greenhouse gases are mostly water vapour and carbon dioxide. The "enhanced" Greenhouse Effect refers to the additional, artificial warming of the lower atmosphere, the troposphere (0-10km above the ground) caused by extra quantities of greenhouse gases which are emitted into the troposphere by human activities. These additional gases, most notably carbon dioxide, methane, nitrous oxide and CFCs act as extra "blankets", absorbing and trapping heat in the troposphere and leading to global climate change. The principle greenhouse gas is carbon dioxide, produced by burning fossil fuels such as coal, oil and gas for energy production. Carbon dioxide is also produced by the destruction of forests and woodlands which contain large quantities of carbon. The Greenhouse Effect may have such a profound effect on our planet, altering natural ecosystems and changing agricultural conditions world-wide, that life on Earth could be changed forever.

The ozone layer is a thin protective mantle 10-50km above the earth, in the upper atmosphere or stratosphere. It acts as a filter for ultraviolet (UV) radiation from the sun. High UV levels can cause skin cancer, cataracts, suppression of immune systems in humans and animals, while damaging marine plankton and adversely affecting the growth of plants. When ozone depleting substances float up into the stratosphere they are split apart by the sun's UV radiation, releasing atoms of chlorine and bromine. These atoms then react with the ozone molecules, breaking them down and destroying them in the process. Many ozone depleting substances last for decades in the stratosphere. While in the lower atmosphere, they are also estimated to be responsible for 15-20% of global warming.

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