



# Ozone Depletion



The ozone layer forms a thin shield in the upper atmosphere, protecting life on Earth from the sun's ultraviolet (UV) rays. In the 1980s, scientists began accumulating evidence that the ozone layer was being depleted. Depletion of the ozone layer results in increased UV radiation reaching the Earth's surface, which in turn can lead to a greater chance of overexposure to UV radiation and the related health effects of skin cancer, cataracts, and immune suppression.

## What Is Stratospheric Ozone?

Ozone is a naturally occurring gas that is found in two layers of the atmosphere. In the layer surrounding the Earth's surface—the troposphere—ground-level or “bad” ozone is an air pollutant that is a key ingredient of urban smog. The troposphere extends up to the stratosphere, which is where “good” ozone protects life on Earth by absorbing some of the sun's UV rays. Stratospheric ozone is most concentrated between 6 to 30 miles above the Earth's surface.

## Ozone Depletion

Until recently, chlorofluorocarbons (CFCs) were used widely in industry and elsewhere as refrigerants, insulating foams, and solvents. Strong winds carry CFCs into the stratosphere in a process that can take as long as 2 to 5 years. When CFCs break down in the stratosphere, they release chlorine, which attacks ozone. Each chlorine atom acts as a catalyst, repeatedly combining with and breaking apart as many as 100,000 ozone molecules during its stratospheric life.

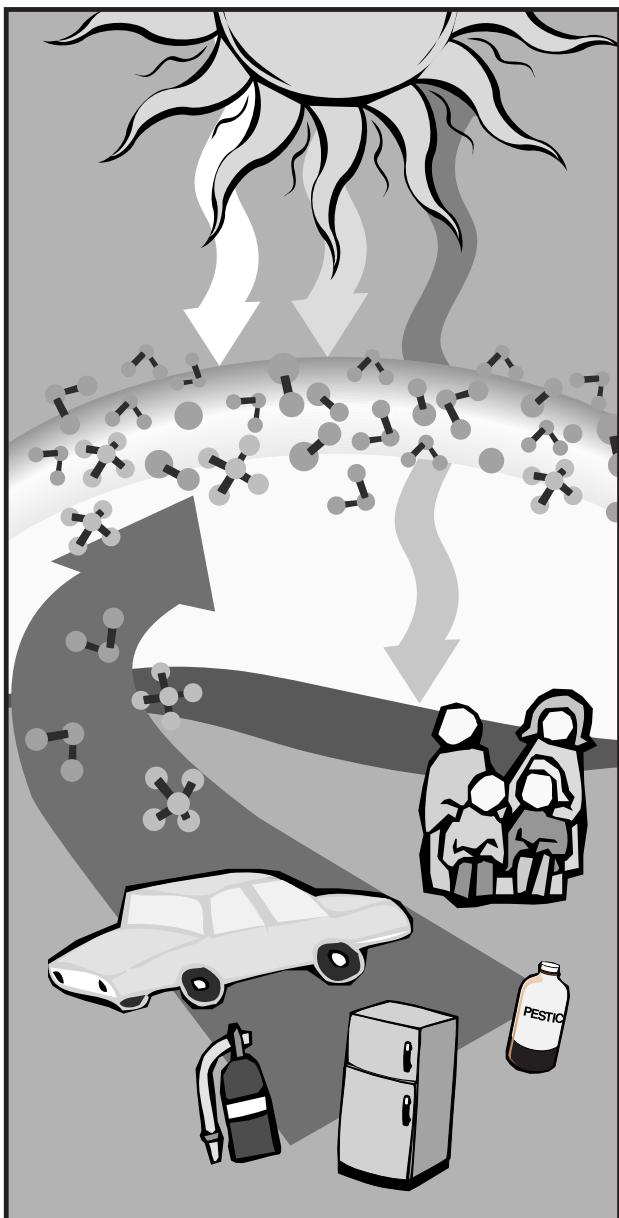
Other ozone-depleting substances include pesticides such as methyl bromide, halons used in fire extinguishers, and methyl chloroform used in industrial processes.

## What Is Being Done?

Countries around the world, including the United States, have recognized the threats posed by ozone depletion and adopted a treaty called the Montreal Protocol to phase out the production and use of ozone-depleting substances.

## How Ozone Depletion Affects UV Levels

Scientists predict that ozone depletion should peak between 2000 and 2010. As international control measures reduce the release of CFCs and other ozone-depleting substances, natural atmospheric processes will repair the ozone layer around the middle of the 21st century. Until that time, we can expect increased levels of UV radiation at the Earth's surface. These increased UV levels can lead to a greater risk of overexposure to UV radiation and related health effects.



The use and emission of ozone-depleting substances damages the stratospheric ozone layer, which allows more UV rays to reach the Earth's surface and cause adverse human health effects.

## EPA's SunWise School Program



In response to the serious public health threat posed by exposure to increased UV levels, the U.S. Environmental Protection Agency (EPA) is working with schools and communities across the nation through the SunWise School Program. SunWise aims to teach children in elementary school and their caregivers about ozone depletion, UV radiation, and how to protect themselves from overexposure to the sun.

### For More Information

To learn more about the ozone layer, the SunWise School Program, and actions being taken to prevent ozone depletion, call EPA's Stratospheric Ozone Information Hotline at 800 296-1996 or visit our Web site at <[www.epa.gov/sunwise](http://www.epa.gov/sunwise)>.



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