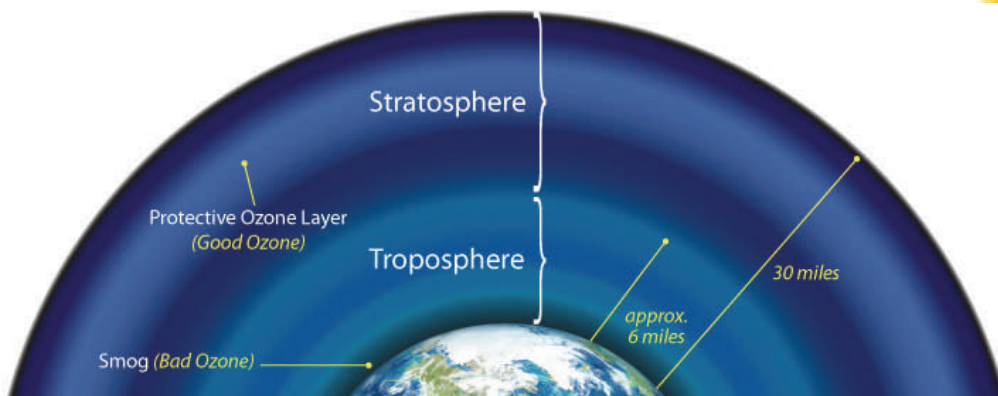


# Ozone Layer Depletion

The stratospheric ozone layer forms a thin shield in the upper atmosphere, protecting life on Earth from the sun's ultraviolet (UV) rays. It has been called the Earth's sunscreen. In the 1980s, scientists found 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 leads to a greater chance of overexposure to UV radiation and the related health effects of skin cancer, cataracts, and immune suppression. This fact sheet explains the importance of protecting the stratospheric ozone layer.

## What is Stratospheric Ozone?

Ozone is a naturally-occurring gas that can be good or bad for your health and the environment depending on its location in the atmosphere. In the layer near the Earth's surface—the troposphere—ground-level or “bad” ozone is an air pollutant that is a key ingredient of urban smog. But higher up, in the stratosphere, “good” ozone protects life on Earth by absorbing some of the sun's UV rays. An easy way to remember this is the phrase “good up high, bad nearby.”



*Ozone “up high” in the stratosphere protects the Earth, while ozone close to the Earth’s surface is harmful.*

substances (ODS) break down in the atmosphere, they release chlorine or bromine, which attack ozone. Each chlorine or bromine atom reacts with ozone, repeatedly combining with and breaking apart as many as 100,000 ozone molecules during its stratospheric life.

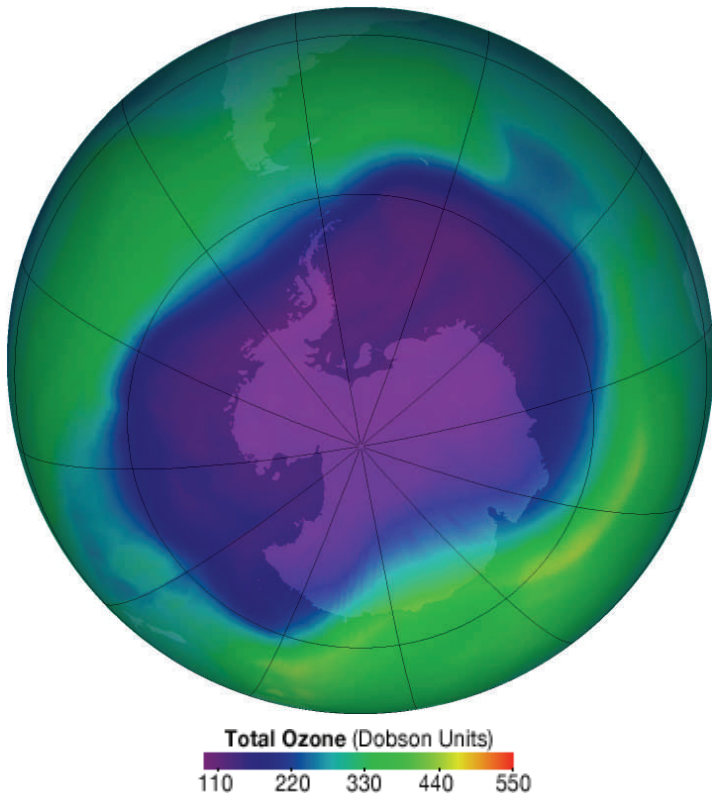
CFCs, which have a long history of use as refrigerants, solvents, foam-blowing agents and in other applications, have been almost completely phased out worldwide. In addition, restrictions are now in place to phase out hydrochlorofluorocarbons (HCFCs), compounds used as substitutes for the more damaging CFCs. The U.S. will phase out HCFCs completely in 2030.

## What is Being Done?

In 1987, the U.S. and fewer than 30 other countries signed the Montreal Protocol treaty to phase out the production and use of ODS. In September 2009, the Montreal Protocol became the first international agreement to reach universal participation, with 196 Parties. The Protocol continues to phase out ODS worldwide. As international control measures reduce the release of ODS, natural atmospheric processes will repair the ozone layer during the second half of the 21st century.

## Ozone Layer Depletion

Compounds that contain chlorine and bromine molecules, such as methyl chloroform, halons, and chlorofluorocarbons (CFCs), are stable and have atmospheric lifetimes long enough to be transported by winds into the stratosphere. When these ozone-depleting



### The Largest Ozone Hole To Date

According to NASA scientists, from September 21 to 30, 2006, the average area of the ozone hole was the largest ever observed, at 10.6 million square miles. The hole is a seasonal occurrence over the South Pole that occurs because of special weather conditions in the Antarctic.

Source: National Aeronautics and Space Administration (NASA)

### What You Can Do

- Visit [www.epa.gov/ozone/strathome.html](http://www.epa.gov/ozone/strathome.html) for more information on the science of ozone depletion, EPA's regulatory programs, ODS alternatives, the phaseout of HCFC refrigerants, and more.
- Properly dispose of your appliances—this will reduce emissions of ODS and greenhouse gases into the atmosphere. See [www.epa.gov/ozone/partnerships/rad](http://www.epa.gov/ozone/partnerships/rad) for more information.
- Shop for energy-efficient appliances, such as those with EPA's ENERGY STAR® label.
- Be SunWise. Visit [www.epa.gov/sunwise](http://www.epa.gov/sunwise) to learn how to safely enjoy the great outdoors under a compromised ozone layer.

## What is EPA Doing About Ozone Layer Depletion?

- Ending the production, import and use of ODS, often ahead of the Montreal Protocol schedule;
- Ensuring that ODS are recycled properly, and prohibiting unnecessary releases of ODS;
- Identifying safe alternatives through the Significant New Alternatives Policy (SNAP) program;
- Banning the release of ozone-depleting refrigerants during the service, maintenance, and disposal of air conditioners and other refrigeration equipment; and
- Requiring that manufacturers label products containing or made with the most harmful ODS.

## EPA's SunWise Program

In response to the serious public health threat posed by exposure to increased UV levels, EPA is working with schools and communities across the nation through the SunWise Program. SunWise is an environmental and health education program that teaches children and their caregivers about ozone depletion, UV radiation, and how to protect themselves from overexposure to the sun. For more information, visit [www.epa.gov/sunwise](http://www.epa.gov/sunwise).

## The UV Index

The UV Index forecasts the strength of the sun's harmful rays. The higher the number, the greater the chance of sun damage.



Visit [www.epa.gov/sunwise/uvindex.html](http://www.epa.gov/sunwise/uvindex.html)

## For More Information

To learn more about ozone depletion, the Montreal Protocol, and the SunWise Program, call EPA's Stratospheric Ozone Information Hotline at 800.296.1996, or visit our Web site at [www.epa.gov/ozone/strathome.html](http://www.epa.gov/ozone/strathome.html).