

## Ozone Layer [UPSC Environment & Ecology Notes]

The ozone layer or ozone shield is a region of the Earth's stratosphere that absorbs most of the Sun's Ultraviolet (UV) radiation. In this article, we are giving some important facts about the Ozone Layer which will be important for the [IAS Exam](#).

Current affairs and General Knowledge is a crucial part of UPSC IAS Prelims as well as Mains examination. Environment and ecology is a very important segment of the [UPSC Syllabus](#). What makes it interesting is that it is intertwined with current affairs immensely. It also has an overlap with other subjects such as geography, economy and social issues for the IAS exam. Every year, several questions are asked from this section in the [UPSC Prelims](#).

### What is the Ozone Layer?

- It is a layer in the earth's stratosphere that contains high levels of ozone.
- This layer protects the earth from the Sun's harmful UV radiation. It absorbs 97 – 99% of the UV radiation from the Sun.
- In the absence of the ozone layer, millions of people would be affected by skin diseases including cancer and weakened immune systems.
- UV radiation would also affect the environment adversely leading to decreased productivity.
- Fauna on earth is also adversely affected by the ozone layer depletion.

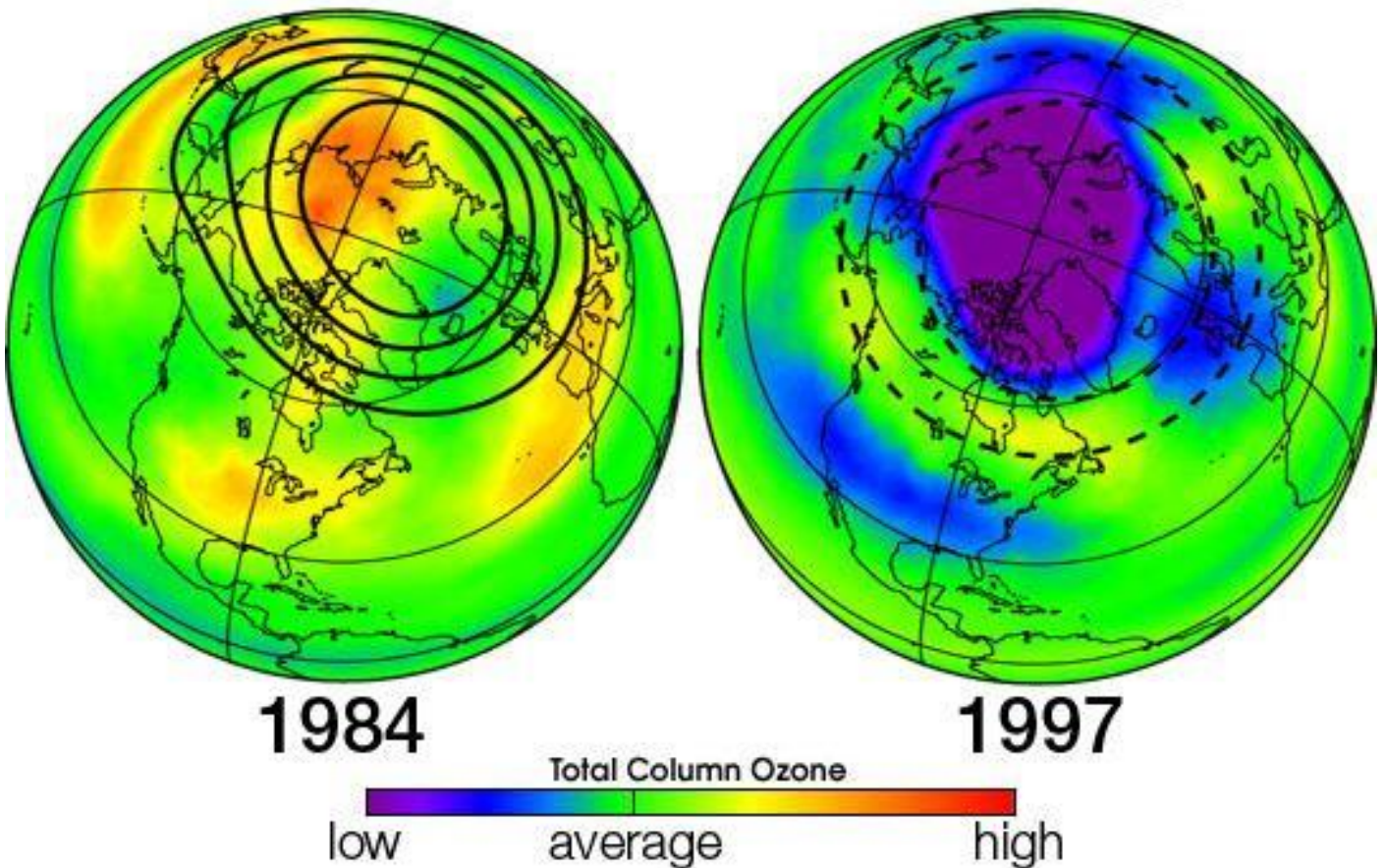
### World Ozone Day

- September 16th is observed as the World Ozone Day. It is the day that marks the signing of the Montreal Protocol.

### Ozone Layer Depletion

———— Strong Long Wave

----- Weak Long Wave



Ozone layer depletion refers to the thinning of the protective ozone layer in the atmosphere.

- This happens when certain chemicals come into contact with ozone and destroy it.
- Chemical compounds that cause ozone layer depletion are called **Ozone Depleting Substances (ODSs)**.
- Examples of ODSs are chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), carbon tetrachloride, methyl chloroform, hydrobromofluorocarbons, halons, etc.
  - **Chlorofluorocarbons (CFC)**: The use of CFCs is one of the main reasons for the depletion of the layer. They are usually used as a coolant in refrigerators and air conditioners used in cars, etc. It is also used as an industrial solvent, in foam products and hospital sterilization equipment.
  - **Methyl chloroform**: Finds its applications usually in industries for chemical processing, etc.
  - **Carbon tetrachloride**: Normally used as a solvent.
- Chlorofluorocarbons are the most abundant ODS.
- The indiscriminate use of these chemicals causes ozone layer depletion.
- These ODSs are also powerful **Green-House Gases (GHGs)** and have a long life as well.
- There are a few natural causes also which cause ozone depletion such as volcanic eruptions, sunspots and stratospheric winds. However, these do not cause more than 1 – 2% of the ozone depletion.

## Ozone Layer Preservation Depletion

The depletion of the Ozone Layer is a serious issue and various programmes have been launched by the government of various countries to prevent it. But, steps should be taken at the individual level as well.

- The **IMO (International Maritime Organisation)** mandated that cargo ships must not use fuel that has sulphur content any higher than 0.5%.
  - This will be implemented from 1st January 2020 as this is one of the many environmental-related issues that is associated with the shipping industry.
- The **Vienna Convention** for the Protection of the Ozone Layer was signed in 1985 under which UN member countries recognized the importance of curbing damage to the ozone layer.
  - As per the Convention's provisions, countries agreed to adopt the Montreal Protocol to further the goals of the Vienna Convention.
- The **Montreal Protocol** was signed in 1987 and entered into force in January 1989.
  - The protocol gives provisions to reduce the production and consumption of ODSs in order to protect the ozone layer.
- Efforts on an Individual level can be as follows:

Avoid Using Pesticides	Minimise the Use of Vehicles
Use Eco-friendly Cleaning Products	The Use of Nitrous Oxide should be Prohibited