



## Stratospheric Ozone Depletion

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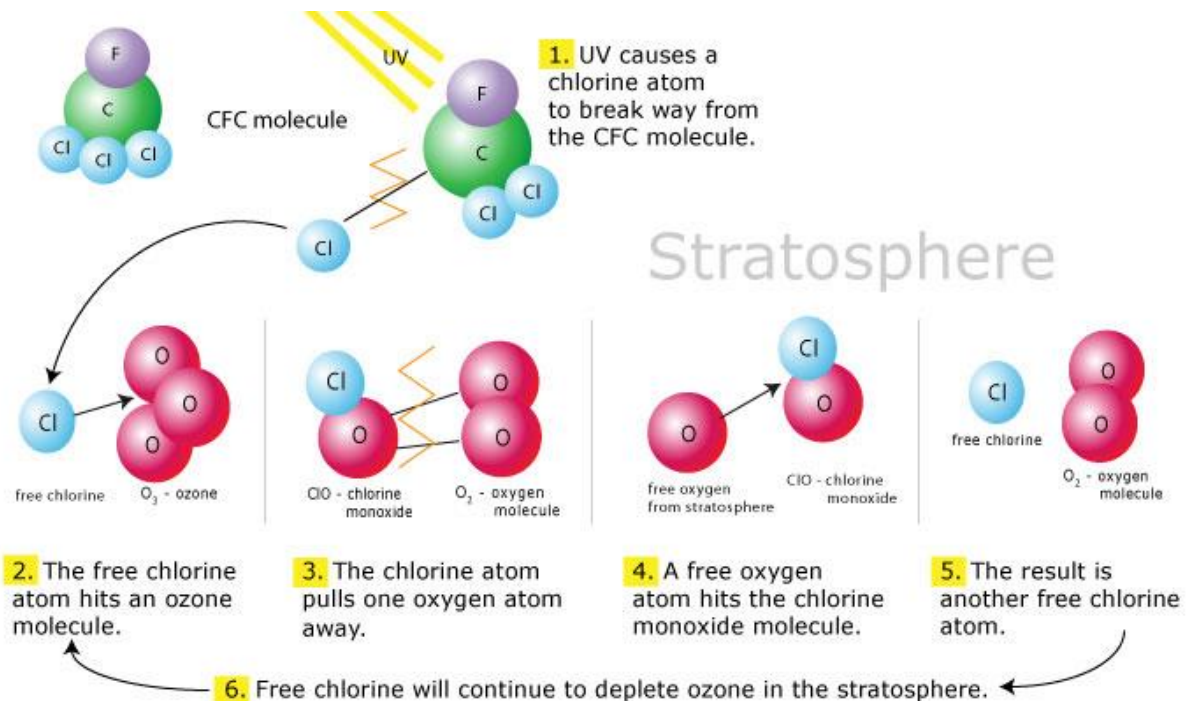


Dear Friends,

This month, we shall talk about Stratospheric Ozone Depletion. This is a success story for mankind that shows that we do have at our command, ways and means to tackle at a global scale, the environmental challenges we face. Ultra-violet rays from the sun has harmful effects on plants, animals and humans (causing skin cancer, particularly in white skinned persons having low melanin levels). The ozone layer in the stratosphere (10 to 50 kms above) helps to absorb most of the harmful UV-B rays and protects us.



Science helped synthesize a group of rather inert compounds called chlorofluorocarbons (CFCs) that were widely used as refrigerants and propellants in aerosols. These relatively inert gases were considered to be good for these applications; and they remained in the atmosphere without any change. But as they accumulated and went further up into the stratosphere, the ultraviolet rays from the sun decomposed them to release free chlorine atoms. These chlorine atoms acted as a



catalyst that broke down 2 molecules of ozone into three molecules of oxygen. Over a period of time, this process resulted in big holes in the ozone layer over Antarctica. This was reported for the first time in 1985.

It was a piece of luck for all of life on Earth that the scientists chose chlorine instead of bromine, which would have been far more dangerous.

The World Meteorological Organization (WMO) launched in 1961 the deployment of World Ozone Data Centers, with the objective of monitoring the level of atmospheric ozone. The holes in the ozone layer caught the attention of scientists all over the globe as well as common public and national governments. Eventually this led to the formulation and adoption of the Montreal Protocol in 1987, and a system of monitoring was instituted. In the process, all over the world people stopped using Ozone Depleting Substances (ODSs) such as CFCs. The WMO carries out and publishes scientific reports on the state of the ozone layer, periodically, since 1981. The WMO 55 of 2014 reported that ODSs are decreasing, with small increase in the thickness of the ozone layer. But the ‘Antarctic ozone holes continues to occur each spring’. It goes on as under:



“Total column ozone will recover toward the 1980 benchmark levels over most of the globe under full compliance with the Montreal Protocol. This recovery is expected to occur before midcentury in mid-latitudes and the Arctic, and somewhat later for the Antarctic ozone hole. The Antarctic ozone hole has caused significant changes in Southern Hemisphere surface climate in the summer.”

Hence, we must not give up our struggle to eliminate all ODS from our daily use.

With prayers for a sustainable future for our children and grand-children.



References:

[http://www.wmo.int/pages/prog/arep/gaw/ozone\\_2014/documents/2014%20Twenty%20Questions\\_Final.pdf](http://www.wmo.int/pages/prog/arep/gaw/ozone_2014/documents/2014%20Twenty%20Questions_Final.pdf)

[http://www.wmo.int/pages/prog/arep/gaw/ozone\\_2014/documents/Full\\_report\\_2014\\_Ozone\\_Assessment.pdf](http://www.wmo.int/pages/prog/arep/gaw/ozone_2014/documents/Full_report_2014_Ozone_Assessment.pdf)