

## Ozone and its Importance

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### Editorial

The ozone layer or ozone shield is a region of Earth's stratosphere that absorbs most of the Sun's ultraviolet radiation. It contains a high concentration of ozone ( $O_3$ ) in relation to other parts of the atmosphere, although still small in relation to other gases in the stratosphere. The ozone layer is mainly found in the lower portion of the stratosphere, from approximately 15 to 35 kilometers (9.3 to 21.7 mi) above Earth, although its thickness varies seasonally and geographically. Although the concentration of the ozone in the ozone layer is very small, it is vitally important to life because it absorbs biologically harmful ultraviolet (UV) radiation coming from the sun. Extremely short or vacuum UV (10–100 nm) is screened out by nitrogen. UV-C, which is very harmful to all living things, UV-B radiation can

be harmful to the skin and is the main cause of sunburn; excessive exposure can also cause cataracts, immune system suppression, and genetic damage, resulting in problems such as skin cancer. Ozone is transparent to most UV-A, so most of this longer-wavelength UV radiation reaches the surface, and it constitutes most of the UV reaching the Earth. The thickness of the ozone layer varies worldwide and is generally thinner near the equator and thicker near the poles. Research has found that the ozone levels in the United States are highest in the spring months of April and May and lowest in October.

The production of ozone in the stratosphere results primarily from the breaking of the chemical bonds within oxygen molecules ( $O_2$ ) by high-energy solar photons. This process called photo dissociation.

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**Received date:** December 10, 2020; **Accepted date:** January 20, 2021; **Published date:** January 28, 2021

**Citation:** Akanksha P (2021) Pollution and its Effects: A Short Note. J Pollut Eff Cont 9:267. doi: 10.35248/2375-4397.20.9.267.

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