



Deforestation impact on ozone layer depletion

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ABSTRACT--There are many situations where human activity have significant impact on the environment an ozone layer by the **Deforestation** the ozone layer is vital for life on earth because it serves as a protective shield in the earth stratosphere. The ozone layer absorbs the majority of the sun's harmful ultraviolet (UV-B and UV-C) radiation. Without this protection excessive UV radiation would reach the earth's surface and causing skin cancer and cataracts in humans, damage to plants reducing crop yields, harm to aquatic ecosystems, especially plankton the foundation of marine food webs. The ozone layer helps maintain the temperature balance of the atmosphere by absorbing and redistributing solar energy. Excess UV radiation can damage the DNA of living organisms, affecting growth and reproduction in marine ecosystems phytoplankton, which are crucial for carbon cycling source in the ocean, are highly sensitive to UV radiation. CFCs and other ozone-depleting substances have significantly thinned the "ozone layer" creating seasonal "Holes" especially over Antarctica.

The ozone layer is an essential natural shield for preserving life on earth, making its protection critical for current and future generations.

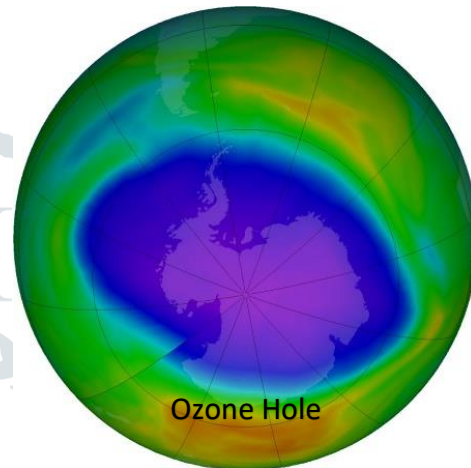
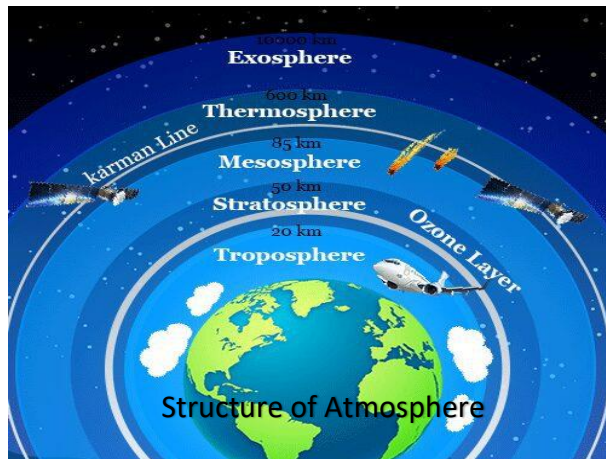
So, we should stop deforestation and grow more and more tree to reduced carbons emission.

Keywords-Deforestation, ozone layers depletion, Environment, CFCs, Global warming, Temperature, Ultra violet rays, Montreal protocol.

INTRODUCTION-The ozone layer is vital for life on earth because it serves as a protective shield in the earth stratosphere, the ozone layers helps maintain the temperature and balance the atmosphere by absorbing the redistributing sun rays. Chlorofluorocarbons gases threats to the ozone layer and other ozone depleting substance have significantly thinned the ozone layer and creating seasonal “holes “especially over the Antarctica.

The protection of ozone layer the Montreal Protocol (1987) successfully curbed the production of ozone depleting substance, the ozone layer is now showing signs of recovery, but continued efforts are necessary to ensure its full restoration. The ozone layer is an essential natural shield for preserving life on earth making its protection critical for present and future generations.

Deforestation impact is the permanent destruction of forest, usually as a result of human activities like agriculture, urbanization, logging and mining.it involves the clearance of tree and other vegetation, often resulting in the loss of biodiversity, soil erosion and increased greenhouse gas emissions.



Consequences of deforestation

Increased Greenhouse Gas Emissions -- Deforestation contributes to climate change and increased greenhouse gas emissions by releasing stored carbon into atmosphere.

Reduced oxygen production-- Forest produced oxygen, which is essential for human life but deforestation reduced oxygen production, which can have severe consequences for human health but forests produce oxygen through photosynthesis.



Deforestation

Decreased water quality -- Deforestation can lead to increased sedimentation and pollution in water ways and decreased the water quality also forests play a crucial role in regulating the water cycle. Deforestation can disrupt this process, leading to changes in river flow, water quality and increased risk of floods and droughts.

Loss of medicinal plants -- Forest are a rich source of medicinal plants, many of which are yet to be discovered but deforestation get loss of medicinal plants.

Navigation impact on local Economies -- Deforestation can lead to economic losses, particularly in industries like tourism and forestry.

Tree cutting -- Deforestation can increase natural disasters such as landslides and floods.

Reduced food and shelter for Animals – Deforestation is the main cause to reduced food and shelter to our animals.

Soil Erosion— Tree help hold soil in place. Without them, soil can be washed or blown away, leading to soil erosion.

Acid Rain—Deforestation can also increase natural disasters such as an Acidic rain.

Deforestation is pressing environmental issue that requires immediate attention, action to promote sustainable forest management practice to mitigate these impacts.

Causes of Deforestation

Agriculture—Expansion of agricultural land for crops, livestock and other product.

Urbanization—clearing of forest for urban development infrastructure and housing e.g. Road developmental, development of new colony in all city, Jal Jeevan mission project for water supply project in rural area.

Logging and Mining -- Harvesting of timber for wood and paper product (paper mill) and Extraction of minerals, oil and gas often resulting in forest destruction.

Infrastructure development—construction of road, dam, power plants, sugar mills, water treatment plant, sewer treatment plant, lift irrigation project etc.

Effects of Deforestation

Deforestation doesn't directly cause ozone layer depletion, the primary culprit are human-made chemicals like CFCs. However, deforestation plays an indirect role by contributing to climate change, which can alter atmospheric conditions and potentially influence ozone layer recovery.

Loss of Biodiversity – Destruction of habitats and extinction of plant and animal species.

Soil Erosion – Loss of soil quality and increased risk of landslides and floods.

Climate Change – Release of stored carbon and contribution to global warming.

Release of carbon dioxide—Tree absorb carbon dioxide during photosynthesis .when forests are cut down or burned stored carbon is release into the atmosphere, contributing to climate change.

Methane Emission-- Deforestation leads to the decomposition of organic matter, releasing methane, a potent greenhouse gas.

Nitrous oxide Emissions – Forest are a significant for sink for nitrous oxide, Deforestation reduces the sink, allowing more nitrous oxide to accumulate in the atmospheres.

Disruption of Atmospheric circulation – Deforestation alters local atmospheric circulation patterns, potentially influencing the transport of ozone depleting substances to stratosphere.

Indigenous community displacement – Loss of traditional lands and livelihoods for indigenous communities, who rely on forests for their livelihood.

Disruption of ecosystems—Forests are complex ecosystems that rely on the interactions between different species. Deforestation disrupts these interactions, leading to decline in ecosystem health.

Altered Atmospheric composition— Climate change can affect wind patterns and atmospheric circulation, potentially influencing the distribution and concentration of ozone –depleting substance.

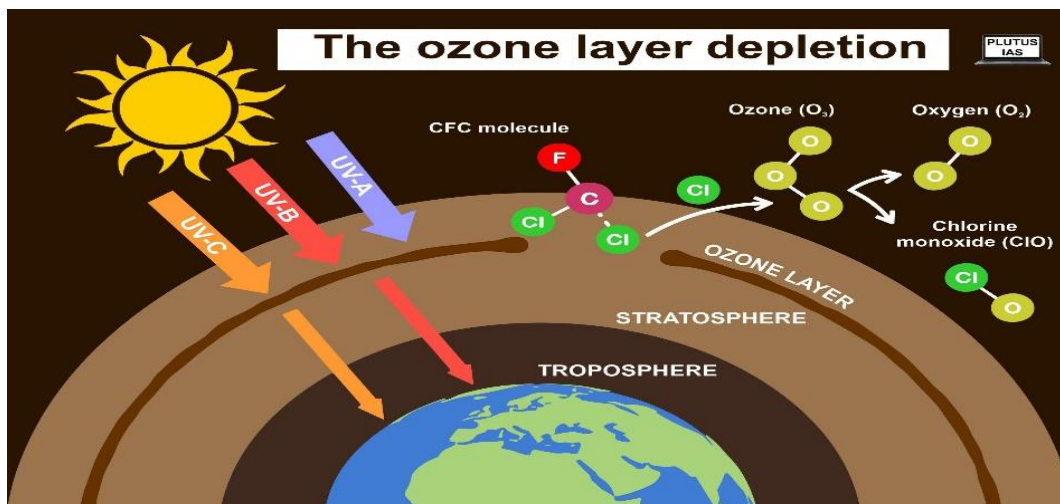
While deforestation direct impact on ozone layer depletion is relatively small compared to other factors like CFCs emissions it contributes to climate change which can exacerbate ozone layer depletion.

CAUSE OF OZONE DEPLETION

Emission of **Chlorofluorocarbons (CFCs)** is the main cause for ozone depletion due to deforestation and CFCs are synthetic compounds consisting of carbon, chlorine and fluorine. They are non-toxic, non-flammable and have been widely used in refrigeration air condition, aerosol propellants and cleaning solvents.

Ozone layer depletion— CFCs are major contributors to the destruction of the ozone layer when released into the atmosphere, they break down in the stratosphere under UV light releasing chlorine atoms that destroy ozone molecules. The rising of temperature in the stratosphere can slow down the recovery of the ozone layer.

Global Warming potential – They are also potent greenhouse gases & during the past few years, earth climate has been noticed to be getting hotter and hotter. The scientist declared the greenhouse effect is changing of our climate.



Greenhouse effect-- Carbon dioxide is considered to be the major greenhouse gas, as it is responsible for about 60% of the total greenhouse effect caused by all the greenhouse gases.

Accomplishment to protect the ozone layer

1-Montreal protocol (1987) an international treaty for controlling Global ozone depletion. The Montreal protocol (1987) successfully curbed the production of ozone- depleting substance, the representatives of certain developed countries meet in 1985 to adopt the VIENNA CONVENTION.

2-Kyoto protocol (1997) – An international treaty to control global warming and climate change— This protocol has been drafted keeping in view the fact carbon based ,gas guzzling global economy with few real alternatives.

3-Rio+20 conference—the efforts of EU countries to lay down new principle of fixing equal responsibilities of all countries. This conference finally approved a document, called **THE FUTURE WE WANT**.

4-World ozone day 2023 & advancing climate Actions 2024 — the theme reflecting the Montreal protocol crucial role in both protecting the ozone layer and driving broader climate action initiatives globally.

At present, 197 nations have become parties to the Montreal protocol INDIA also signed the Montreal protocol on 17/09/1992 to develop the CFC free technology.

SALIENT POINTS OF CONFERENCE--

I-The protocol requires all parties to ban export and import of HCFCs.

ii-Production and consumption of CFCs, halons, and other ozone depleting chemical have been phased out in industrialised countries.

iii-Developing countries have agreed to freeze most CFCs consumption.

The ozone layer is now showing signs of recovery but continued efforts are necessary to ensure its full restoration.

The ozone layer is an essential natural shield for preserving life on earth.

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