

Protect
Our Species

Earth Day 2019



Awareness Workshop and 'Environment and Earth Care' Lecture

At India International Center, New Delhi on 25th April 2019

Dr. (Mrs) Malti Goel

Climate Change Research Institute



Part I – Global Warming and Climate Change

WORLD EARTH DAY - GENESIS



- The 'Club of Rome' came into being in 1968 to share a common concern for the future of humanity and raised its voice against degrading environment.
- Gaylord Nelson, a Senator in Seattle, USA championed the cause and suggested Earth Day to create awareness among people. First Earth Day was celebrated on April 22, 1970.
- Since then it is celebrated every year on April 22. Each year different themes are adopted, like 2008 theme was 'Trees Please'
- Trees absorb CO₂ from air and give out oxygen (O₂).
- Trees in one acre produce enough O₂ for 18 people in a year and remove 2.6 tons of CO₂, which is equivalent to driving a car to a distance of 40,000Km
- This year the Theme is "Protect our Species".
- A special Guest Lecture is being organized on 'Conservation and Sustainability of Biological Resources on the Planet Earth: Present and Future' by Guest of Honor Dr. M. Sudhakar, Director, CMLRE, Cochin



What has changed since 1970

- World Population has almost doubled
- CO2 Emissions have increased exponentially
- Global Warming impacts are becoming visible
- Plastic Waste on the land and oceans has grown significantly
- Forests and Water are Shrinking
- Living species are declining
- Ice is melting on Arctic and Antarctic

But Also.....

- Environment Acts have been introduced
- Industries have moved out from urban areas
- Vehicles are becoming more efficient
- Climate Treaties like Montreal Protocol have helped to regain Ozone in the Stratosphere
- Efforts to reduce CO2 Footprints are growing as a result of Climate Change Protocols



Global warming is due to Enhanced Greenhouse Effect caused by anthropogenic activities – particularly burning of fossil fuels (coal, oil and natural gas), agriculture and land clearing – are increasing the concentrations of greenhouse gases. When the Sun's energy reaches the Earth's atmosphere, some of it is reflected back to space and the rest is absorbed and re-radiated by greenhouse gases causing warming of Earth surface.

Coal based thermal power generation



Pollution from Automobiles



MAJOR GREENHOUSE GASES

- * Nitrous Oxide N_2O
- * Water Vapor H_2O
- Methane CH_4
- CFCs
- Carbon Dioxide CO_2

(A trace constituent, but very effective at trapping infrared radiation)

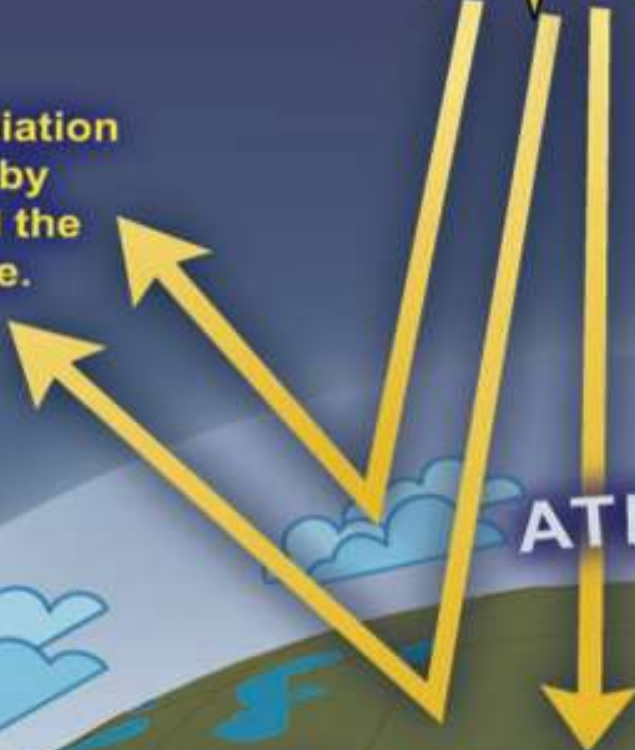
The Greenhouse Effect

Some of the infrared radiation passes through the atmosphere but most is absorbed and re-emitted in all directions by greenhouse gas molecules and clouds. The effect of this is to warm the Earth's surface and the lower atmosphere.

Solar radiation powers the climate system.



Some solar radiation is reflected by the Earth and the atmosphere.

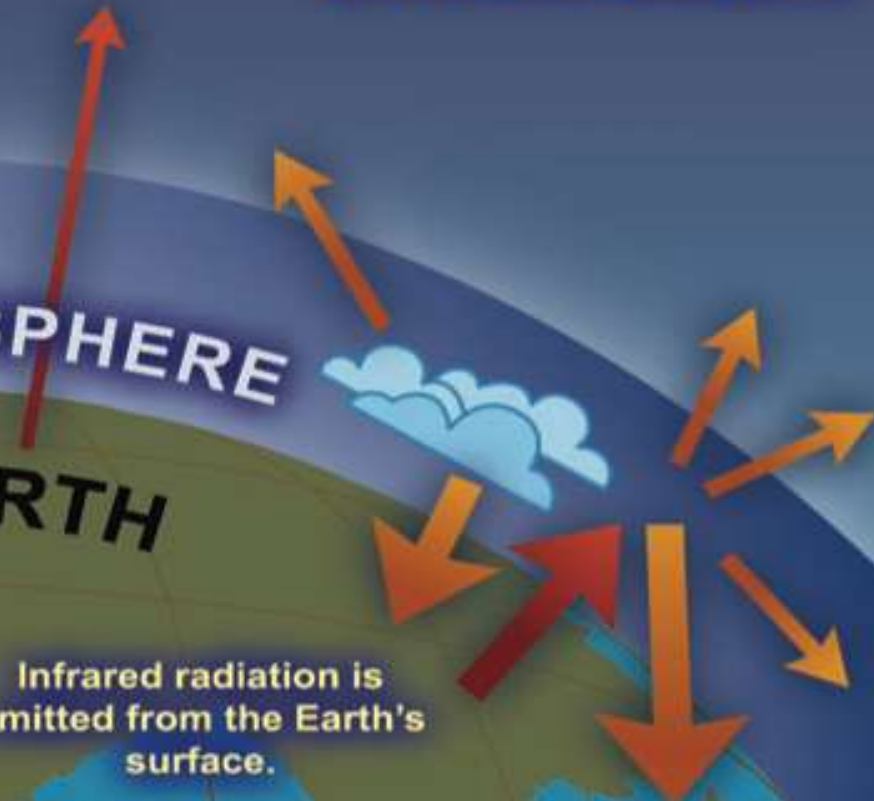


ATMOSPHERE

EARTH

About half the solar radiation is absorbed by the Earth's surface and warms it.

Infrared radiation is emitted from the Earth's surface.





Climate is Changing

- Temperatures are rising
- Sea levels are rising
- The oceans are acidifying
- Climate change is reflected in water cycle changes and intensity of frequent extreme weather events
- **Consequent ecosystem changes are affecting living species**



Some facts



- Forests cover 31% of Earth's Land Surface and house 80 % of Word's Terrestrial Biodiversity .
- Tropical Rain Forests are only 2% but house nearly 50% of the species.
- Conservation of the ocean and its marine life is important to protect the marine living species that are harmed by human activities.

How we look at Earth Today





Part II – About Inter-School Essay Competition

ENVIRONMENT IN DELHI



Theme: **Environment in Delhi**

- To meet the goals of World Earth Day Campaign 2019 with the theme 'Protect Our Species', the Climate Change Research Institute organized Inter-School Essay Competition for Students from Class IX-XII.
- Students could write an Essay on any one of the sub-theme as below:
 - Air Pollution in Delhi
 - Causes of Pollution
 - Pollution Data Measurement
 - Impacts on Health
 - Climate Change Impact on Pollution
 - Ways to Improve Environment
- Three best entries from each school were received and judged for Awards. Some of the topics raised in these are discussed here



Air Quality Index

The AQI is Air Quality Index for air quality. It focuses on health effects, you may experience within a few hours after breathing polluted air. Its purpose is to understand what air quality means to your health and not exactly the quality of air.

Air Quality Index (AQI) Values	Levels of Health Concern	Colors
<i>When the AQI is in this range:</i>	<i>..air quality conditions are:</i>	<i>...as symbolized by this color:</i>
0 to 50	Good	Green
51 to 100	Moderate	Yellow
101 to 150	Unhealthy for Sensitive Groups	Orange
151 to 200	Unhealthy	Red
201 to 300	Very Unhealthy	Purple
301 to 500	Hazardous	Maroon



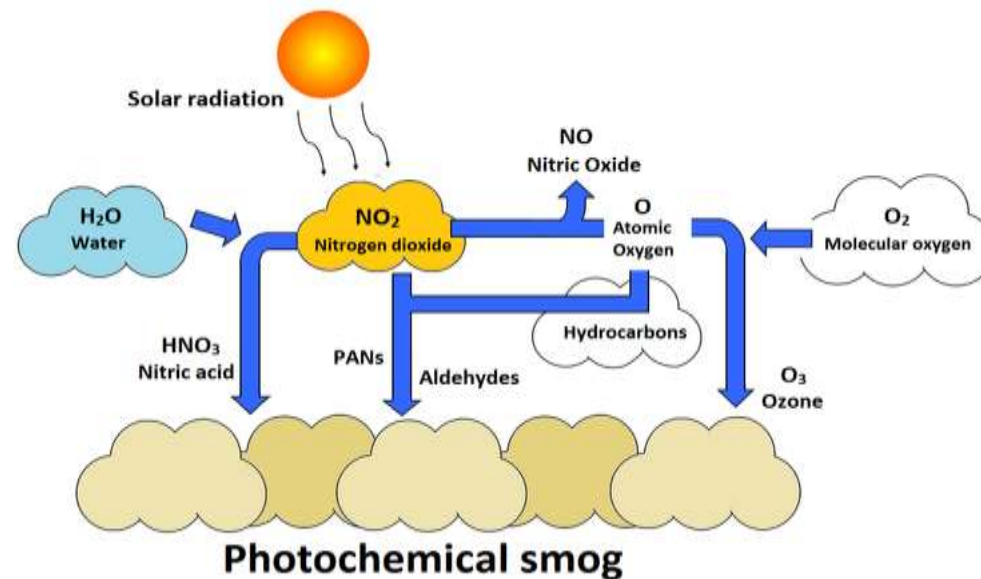
Primary pollutants are emitted from many sources directly into the atmosphere. They are:

- Nitrogen oxides (NO_x)
- Carbon monoxide (CO)
- Volatile organic compounds (VOCs)
- Sulfur oxides (SO_x)
- Particulate matter (PM)
- Mercury and others

Due to improved Regulations and Technology as well as economic development primary pollutant emissions are now decreasing at many places.

Secondary pollutants are formed in the atmosphere by reaction of primary pollutants in the atmosphere. The reaction takes place in presence of sunlight and other chemicals.


Secondary pollutants are Ozone, PeroxyAcyl Nitrates (PANs), and Nitric acid (Acid rain) etc.



- **Environmental Performance Index (EPI)** ranks countries on 24 **Performance Indicators** across ten issue categories. **Environmental Health** and **Ecosystem Vitality** cover



Biodiversity
Forests
Fisheries
Agriculture etc.



AQI
Water quality
Sanitation
Household fuel etc.



- EPI was launched in 1974 by the WHO.
- India launched EPI in 1978
- The Index gives a measure of different Policies and current state of **Affairs**
- In Global ratings Finland has highest EPI rating of 90.68
- India Need to increase drive towards sustainability efforts, being slipped to 177 position in 2018
- Need to reduce or remove excess CO₂ emissions in the atmosphere



- ❑ Iceland is another country that takes its environment very seriously and invests in its sustainability.
- ❑ In Iceland in an experiment to remove CO₂ from the atmosphere, emissions from a power plant were mixed with water and pumped into basalt rocks underground.
- ❑ Within 2-3 years it was turned into stone. Earlier it was thought that manmade process would be slow, as natural process takes much longer



Many such new innovations are taking place to develop ways to capture the excess emissions from the atmosphere and bury them under ground or in the Sea and convert them to some useful product.



***One day we will have to apologize to
the Earth and tiptoe quietly away.***

--Abdellatif Laâbi, 1992

Thank you