

## POLLUTION:AN OVERVIEW

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### Introduction:

“Only after the last tree has been cut down...,the last river has been poisoned .....,the last fish caught....only then ,we will find the money cannot be eaten. Wake up ..., adopt green life.

Pollution is the introduction of contaminants in to the natural environment that cause adverse change .Pollution can take the form of chemical substances or energy ,such as noise, heat or light ,the contamination of air ,water, or soil by substances that are harmful to living organisms. Pollutions can occur naturally, for example, through volcanic eruptions, or as result of human activities, such as spilling of oil or disposal of industrial waste.

Presence of matter (gas,liquid,solid) or energy (heat,noise,radiation) whose nature, location or quantity directly or indirectly alters characteristics or process of any part of the environment ,and cause (or has potential to cause)damage to the condition,health,safety or welfare animals,humans,plants or property.

Pollution is the action of making something impure and often unsafe or unsuited for use

Pollutions in general classified into four.

- 1) Land pollution: It refers to the deposition of solid or liquid waste materials on land or underground in a manner that can contaminate the soil and ground water ,threaten public health and came unsightly conditions and nuisances
- 2) Water pollution: This is refers to the contamination of water bodies. These may include lakes, rivers,oceans,aquifers and ground waters.
- 3) Air pollution: is the introduction of particles ,biological molecules causing diseases, death to humans, damage to other living organisms such as food crops, or natural or built environment.
- 4) Noise pollution: Noise is generally

**Role of ministry:** The ministry of environment, forest and climate change started functioning since the year1985.The ministry plans, promotes, coordinates and oversees environmental ,ecological, forestry and wildlife programmes.

The broad objective of the ministry are (1) conservation and survey of flora, fauna including forests and wildlife.(2)prevention and control of pollution.(3) Afforestation and regeneration of degraded area.(4)Protection of environment and welfare of animals.

Control of air pollution: The National Air Quality index(AQI) has been launched by the Hon'ble Prime Minister on 6-4-15.AQI tool is located in the web portal of central pollution control board(CPCB) for public information on the states of ambient air quality of selected cites considering eight pollutants ,ie sulphur dioxide, nitrogen dioxide,lead,ozone ,PM 10,PM2.5,carbon monoxide and ammonia for short term.

Various steps were taken by the Government such as reduction of sulphur in diesel,Bharath IV emission norms for new passenger cars and Bharath stage III for two wheelers in metro cities, commensurate with improved fuel quality. Coal to LPG in kitchen reduced ambient levels of SO2

.Various measures such as implementation of Bharath stage III/IV norms etc have been taken into mitigate ambient NO<sub>2</sub> and PM<sub>10</sub> levels. Decision already taken to implement BS IV by April 2017 across the country and BS-VI by April 2020.

During the year, standards in respect of following category of industries have been evolved and are being finalized for notification.

- 1) Effluent and emission standard for paint industry .
- 2) Effluent and emission standard for coffee processing industry.
- 3) Emission standard for brick kiln industry.
- 4) Effluent standards for slaughter house.
- 5) Effluent standards for textile industry.
- 6) Effluent standards for sewage treatment plants.
- 7) Standards for bathing water quality.
- 8) Efficient and emission standard for fertilizer industry.
- 9) Efficient and emission standard for automobile service station ,bus depot and workshops.

Municipal solid waste management including plastic waste management –rules provides for waste management system to be established by the municipal authorities. The municipal authorities have been made responsible for setting up, operationalization and coordinating of the waste management system and for ensuring safe collection, storage, segregation, transportation and processing and disposing of plastic waste. Ministry regulatory provides financial assistance to create awareness on the various provision of the rules.

Health care establishments given responsibility for common bio-medical treatment and storage facilities and civil societies.

Electricity generation in the country is and would remain predominantly coal based in the near future. The management of fly ash has thus been a matter of concern in view of requirement of large area of land for its disposal because of its potential of causing pollution of air and water. To address environment ,forest and climate change(MOEF&CC) issued notification for fly ash utilization and utilizing the fly ash in various activities and schemes.

As per national river conservation plan(NRCP) action taken by the Government to improve the water quality of rivers, which are major water sources in the country .Through implementation of pollution abatement works kin various town along identified polluted stretches of rivers on cost sharing basis between the central and state government.

National wetlands conservation programme (NWCP) and national lake conservation plan (NLCP) both merged to a one integrated scheme “National plan for conservation of aquatic ecosystem (NPCA).The scheme aims at holistic conservation and restoration of lakes and wet lands for achieving the desired water quality enhancement ,besides improvements in bio diversity and ecosystem through an integrated and multidisciplinary approach and a common regulatory frame work. The scheme would contribute to reduction of pollution loads in lakes and wise use of wetland resources and their services.

**Enforcing agencies:**

	Enforcing agencies	Sphere of responsibility/pollution median
1	Ministry of health	Noise,sanitary,quality control of drinking water and odour nuisances
2	Ministry of Agro industry	Pestisides residue,soil and compost waters in the coastal zone
3	Ministry of fisheries	Other than water in the port
4	Port master	Waters in the port
5	Waste water management authority	Effluents
6	Water resource unit	Inland waters(rivers,rivulets,dams etc)
7	Ministry of local Government	Solid wastes and hazardous wastes
8	Local authority	Cleaning of boreland,removal of bulky wastes, cleaning of drains and canals. Issue of land use permit ,trade license etc

**Research in environment:** The ministry of environment, forest and climatic change has taken a number of new initiatives to strengthen scientific research in the area of environmental sciences. The overall objective of the R&D scheme of the ministry is to promote basic and applied research in various facets of ecological development.

Environmental Research programme (Env RP) deals with problems related to pollution and development of suitable cost effective technologies for abatement of pollution. Emphasis is laid on development of eco friendly biological and other interventions for prevention ,abatement of pollution and development strategies ,technologies and instruments etc for control of pollution.

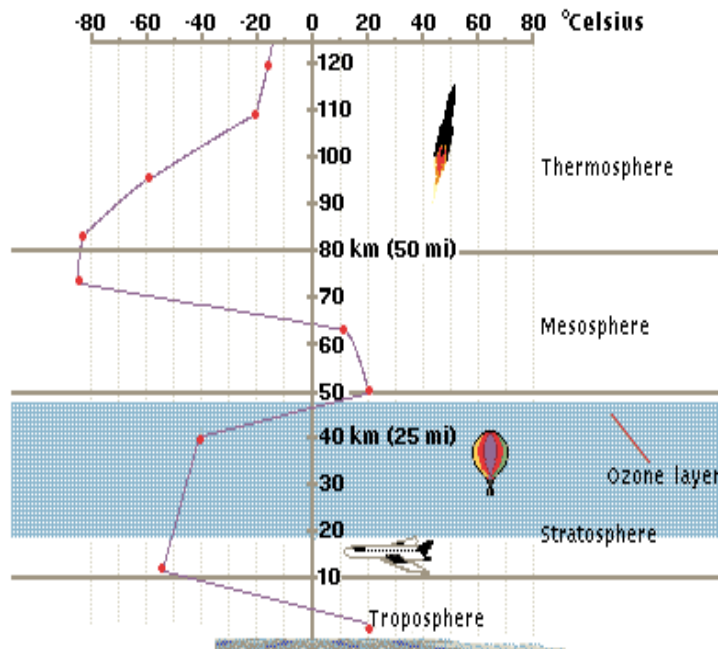
The national designated entity (NDE) for reducing emissions from deforestation and forest degradation (NDE REDD) has been established in the climate change division of the ministry.

**Environmental challenges:** Green house effect: Increasing global temperature. Scientists predicting that earth's temperature will increased b 3-4 degree centigrade by year 2030,if the pollution continues to increase at the same space.

- 1) Ozone depletion: As ozone in the upper atmosphere absorbs incoming harmful ultraviolet radiations but it is now getting thinner and more UV's are reaching in to earth creating different diseases like cancer, eye problem .
- 2) Photo chemical smog: This smog was caused by for,smoke,ash,SO2 and NO2.Sunlight played a great role in the formation of this smog.
- 3) Acid rain: Is caused by oxides of nitrogen and sulphur. It increases acidity of soil and effects the growth trees and plants. The majestic monument Thaj Mahal in India is also affecting by this

Our current atmosphere is a mixture of many different gases & suspended particles. It is almost same every where up to an altitude of 80 Kms. The atmosphere is divided in to 4 layers –

# Atmosphere



Name of sphere or layer	Height in Kms.	Temperature	Important Chemical Species (Gas)
Troposphere	0-8	15 to 45	$N_2, O_2, CO_2, H_2$
Stratosphere	8-50	-55 to 05	$O_3, O_2$
Mesosphere	50-80	-2 to -90	$N_2+O_2$
Ionosphere	80-400		$O_2, O^+, NO^+$
Exosphere	400-1600		$H_2, He$

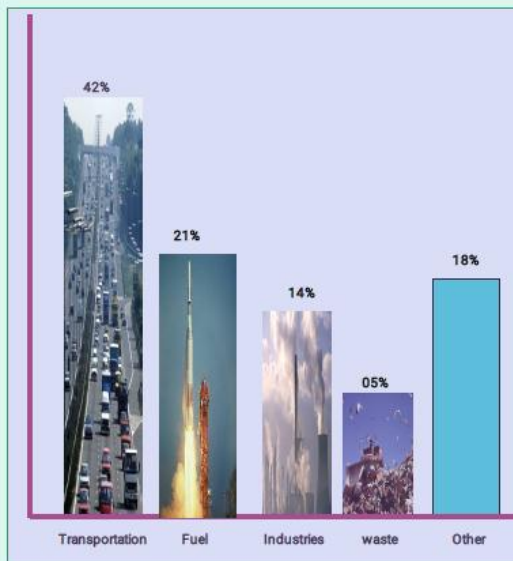
## Composition of Atmosphere

Constituent	Symbol	Average concentration	Source	Volume
Nitrogen	N <sub>2</sub>	780900	Biotic	7.809× 10 <sup>1</sup>
Oxygen	O <sub>2</sub>	209400	Biotic	2.094× 10 <sup>1</sup>
Argon	Ar	9300	Radioactive	9.3× 10 <sup>-1</sup>
Carbon dioxide	CO <sub>2</sub>	318318	Biotic & industrial	3.18× 10 <sup>-2</sup>
Neon	Ne	18	Internal	
helium	He	5.2	Radioactive	5.2× 10 <sup>-4</sup>
Methane	CH <sub>4</sub>	1.3	Biotic	1.3× 10 <sup>-4</sup>
Krypton	Kr	1.0	Internal	1.0× 10 <sup>-5</sup>
Hydrogen	H <sub>2</sub>	0.5	Biotic & photochemical	5.0× 10 <sup>-5</sup>
Water	H <sub>2</sub> O	0.25	Physical	2.5× 10 <sup>-5</sup>
Carbon monoxide	CO	0.1	Photochemical & industrial	1.0× 10 <sup>-5</sup>
Ozone	O <sub>3</sub>	0.02	Photochemical	2.0× 10 <sup>-6</sup>
Ammonia	NH <sub>3</sub>	0-01	Photochemical	1.0× 10 <sup>-6</sup>
Nitrogen dioxide	NO <sub>2</sub>	0.001	Biotic & industrial	1.0× 10 <sup>-7</sup>
Sulphur dioxide	SO <sub>2</sub>	0.002	Photochemical	2.0× 10 <sup>-8</sup>

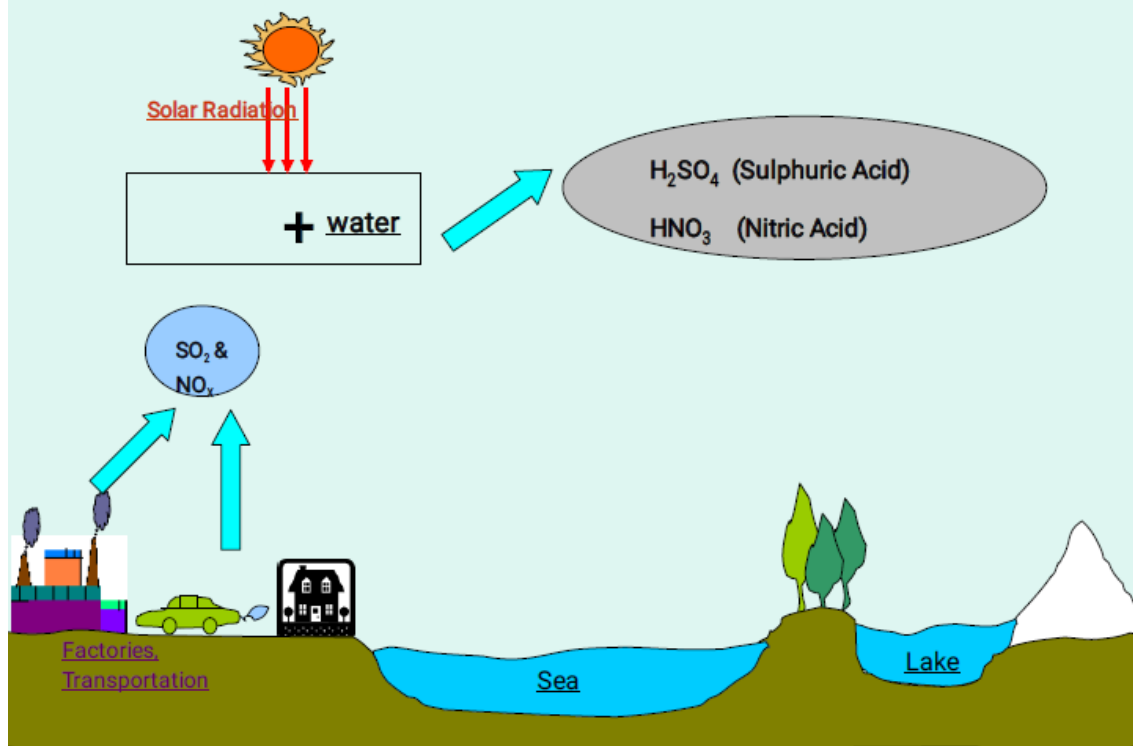
# Atmospheric Pollution

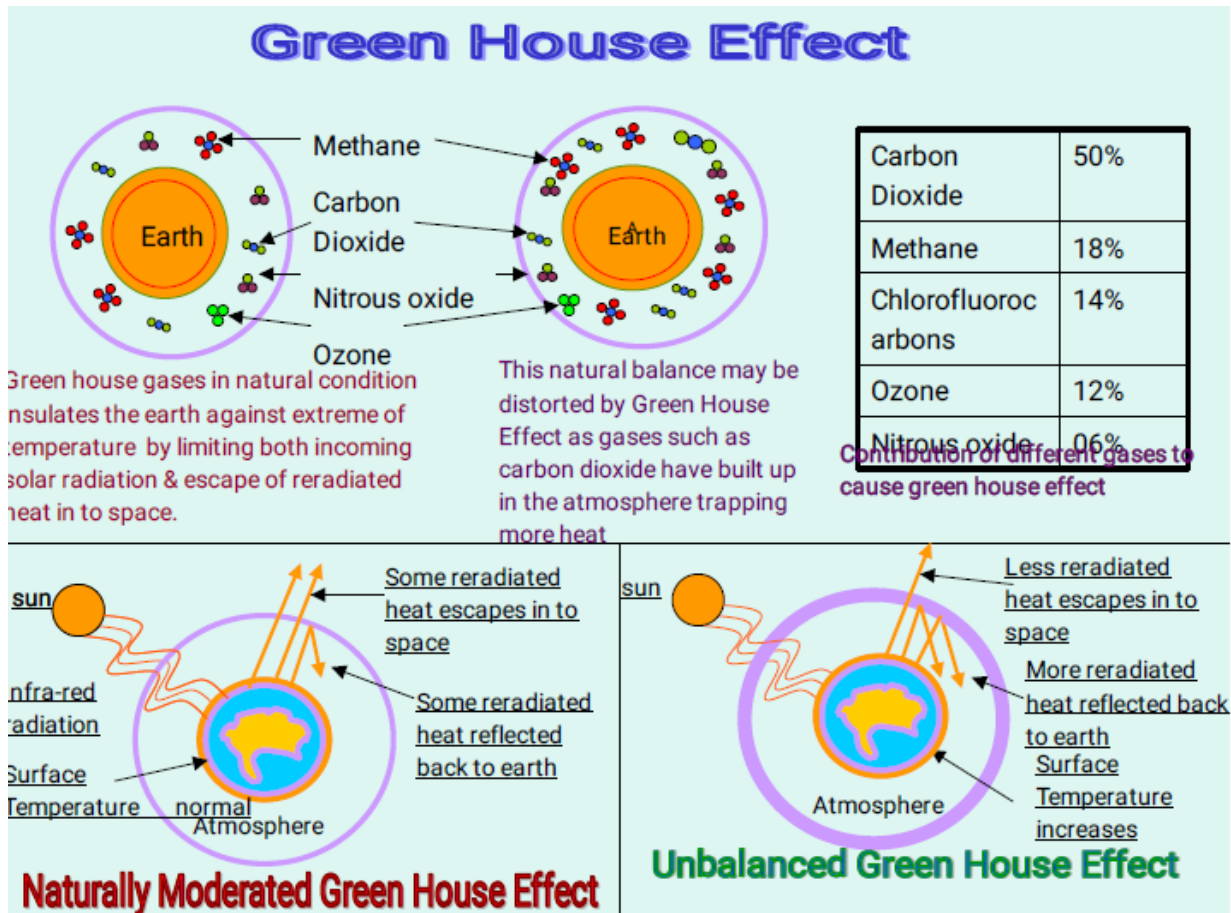
Is an unwanted change in the quality of earth's atmosphere caused by emission of gases due to burning of fossil fuel, transportation, industrial institution etc.

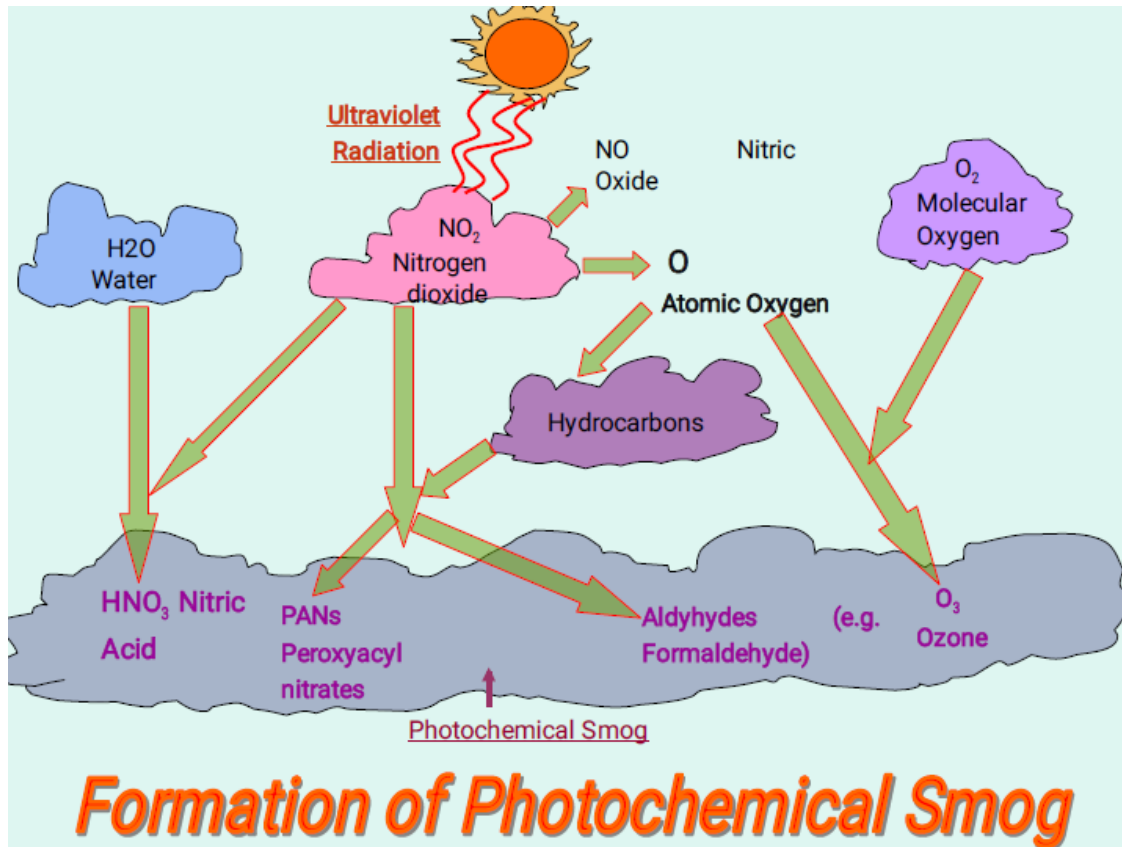
Source	Pollution
Transportation	42%
Fuel	21%
Industries	14%
Solid waste disposal	05%
Other	18%



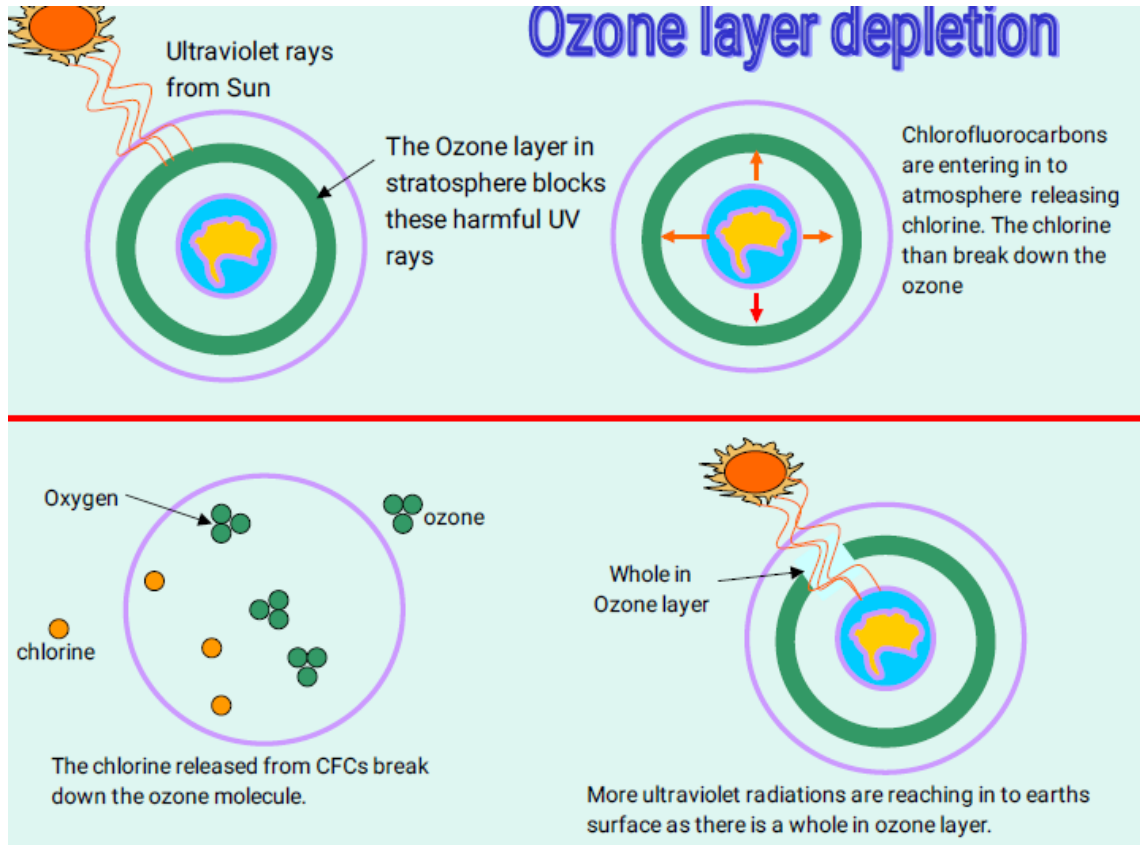
# Acid Rain

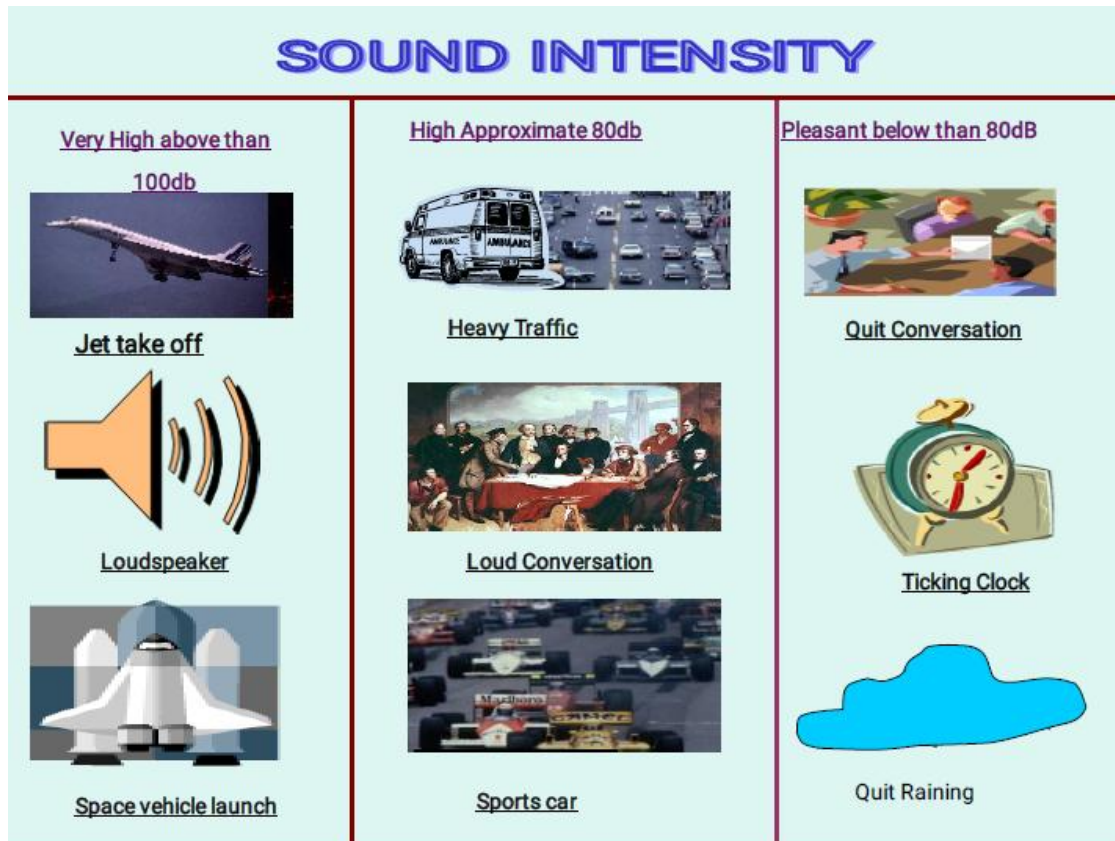












**Conclusion:** professional ethics is essential for ensuring a safe and sound environment .The responsibility not only on the engineering but also on the policy makers ,government and non government organizations ,donor agencies as well as the general public. Good governance in every sector is essential to ensure ethical management of the environment. Communication between the professionals and policy makers –end users provides the key to success.

We know that certain environment conditions like air, water and food are essential for man's survival. Apart from their availability their quality and quantity must be assured according to man's natural and acquired capacity for sustenance progress in industrialization has brought environmental hazards such as air ,water and noise pollution. These have caused many health problems and diseases.

As it has been said- " we do not inherit environment from our fore fathers, we borrow it from future generation.

Stockholm conference of 1972 proclaims that ,the protection and improvement of human environment is a major issue which affects the well being of people and economic development throughout the world and it is duty of all governments and people to common efforts for the presentation and improvement of environment for the benefit of all people and their prosperity.

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