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Environment and Air Pollution: Causes and Effect on Human Body

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I. INTRODUCTION

Environmental concerns have gathered vital attention worldwide these days. The life on the earth is sustained by a sort of balance created and maintained by nature.

The balance created by nature is so delicate that even if a part of it is destroyed or disturbed, the whole system comes under strain. Due to urbanization, industrialization and increase in human activities our biosphere is getting disruption which has been posing serious challenges before the mankind.

In the present paper we want to discuss about air pollution. Air pollution is the pollution of air by smoke and harmful gases, mainly oxides of carbon, sulphur and nitrogen. At that time, the air was thick with smoke from fires and the smell of sewers. Air pollution has been a danger to human health and Earth's many ecosystems for a long time.

II. ENVIRONMENT POLLUTION

The wants, needs and greediness of man have been instrumental in environment related issues. The increasing interference of man with the element of nature such as air, water, soil, forests, wild life etc. has adversely affected environment. Consequently, the world community is bound to live in polluted environment. Due to the increasing pollution not only the human being rather entire life spectrum and progress are at stake.

The statistics reveal that India has only 11% of its total area under forests against a desired area of 33%. The flora and fauna are being recklessly destroyed for selfish ends. Illegal felling of trees and fast dwindling of forests and wild life, there has been a serious threat to the quality of life or to the whole spectrum of ecology.

There was a lot of hue and cry about air pollution in the National Capital Region (NCR) caused by crackers on the occasion of Diwali.

The Supreme Court of India had to intervene and issued directives to curtail sale of crackers in the NCR area during Diwali. But crackers are not only responsible for pollution or health hazards rather water, soil, noise, chemical pollution are also greatly affecting the health and hygiene.

III. CONSEQUENCES

The Lancet Commission reveled in its report on pollution and health, that environmental pollution from filthy air to contaminated water is killing more people every year than all war and violence in the world; more than smoking, hunger or natural disaster; more than AIDS, Tuberculosis, and Malaria.

According to the study – disease caused by pollution were responsible for an estimated a million premature deaths in 2015. It comes about 16% of all deaths worldwide, three times more deaths than AIDS, T.B. and Malaria combined. The financial loss from pollution related death, sickness and welfare is equally massive. It is most often the poorest class suffers most, the vast majority of pollution related deaths 92% occurs in low or middle income group.

The study says where policy makers are chiefly concerned with developing their economy, lifting people out of poverty and building basic infrastructure.In India one out of four premature deaths in year 2015 i.e. 2.5 million can be attributed to pollution. This ratio in other countries take Pakistan, Bangladesh, Korea, Sudan etc. also see a fifth of their premature deaths caused by the pollution.

This is the sad effect of the decade's neglect of pollution and its harmful effect on people's health, environment and planet both by Government and International Development Community. (The Lancet, October 2017)

A.   Air Pollution

Last 30 days air pollution (01-11-2018 to 01-12-2018)

CITY	PM2.5 AQI	PM10 AQI
Agra	344	-
Ahmedabad	244	-
Ajmer	145	128
Alwar	71	101
Amaravati	95	113
Amritsar	104	127
Asansol	224	144
Aurangabad	163	121
Baghpat	373	265
Bathinda	99	134
Bengaluru	78	97
Bhiwadi	331	352
Brajrajnagar	235	132
Bulandshahr	374	285
Chandrapur	81	114
Chennai	96	-
Chikkaballapur	59	68
Delhi	356	294
Dewas	134	128
Durgapur	-	138
Faridabad	363	-
Gaya	307	-
Ghaziabad	377	320
Greater Noida	369	311
Gurgaon	323	225
Haldia	-	139
Hapur	374	287
Howrah	316	211
Hubballi	72	90
Hyderabad	97	116
Jaipur	168	146
Jalandhar	170	122
Jodhpur	307	198
Jorapokhar	-	349
Kalaburagi	116	-
Kanpur	349	-
Khanna	77	106
Kolkata	334	210
Kota	192	157
Lucknow	360	-
Ludhiana	82	117
Mandi Gobindgarh	165	125
Mandideep	284	195
Moradabad	314	196
Mumbai	118	149
Muzaffarnagar	362	272
Muzaffarpur	385	-
Nagpur	129	122
Nashik	94	88
Navi Mumbai	-	112

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Noida	371	338
Pali	204	137
Panchkula	82	-
Patiala	97	107
Patna	376	-
Pithampur	153	143
Pune	154	113
Rajamahendravaram	101	108
Rohtak	161	-
Rupnagar	104	113
Satna	22	157
Siliguri	204	150
Thiruvananthapuram	75	67
Tirupati	67	71
Udaipur	151	165
Ujjain	229	159
Varanasi	354	294
Vijaywada	65	81
Visakhapatnam	91	105

B. Air Quality Index

Awareness of daily levels of air pollution is important to the citizens, especially for those who suffer from illnesses caused by exposure to air pollution. Further, success of a nation to improve air quality depends on the support of its citizens who are well-informed about local and national air pollution problems and about the progress of mitigation efforts. Thus, a simple yet effective communication of air quality is important.

The concept of an air quality index (AQI) that transforms weighted values of individual air pollution related parameters (e.g. SO_2, CO, visibility, etc.) into a single number or set of numbers is widely used for air quality communication and decision making in many countries.

After reviewing literature (on AQI), air quality monitoring procedures and protocols, Indian National Air Quality Standards (INAQS), and dose-response relationships of pollutants, an AQI system is devised. The AQI system is based on maximum operator of a function (i.e. selecting the maximum of subindices of individual pollutants as an overall AQI). The objective of an AQI is to quickly disseminate air quality information (almost in real-time) that entails the system to account for pollutants which have short-term impacts. Eight parameters ($PM10$, $PM2.5$, NO_2, SO_2, CO, O_3, NH_3, and Pb) having short-term standards have been considered for near real-time dissemination of AQI. It is recognized that air concentrations of Pb are not known in real-time and cannot contribute to AQI. However, its consideration in AQI calculation of past days will help in scrutinizing the status of this important toxic. The proposed index has six categories with elegant colour scheme, as shown below.

AQI leavel   Remark

(0-50)   Good, Air Quality is satisfactory and poses little no risk. Ventilation your hove is recommended

(51-100)   Moderate, Sensitive individual should avoid outdoor activity as they may experience respiratory symptoms

(101-200)   Unhealthy, General public and sensitive individuals in particular are at risk to experience irritation and respiratory problems

(201-300)   Very Unhealthy, General public will be noticeable affected. Sensitive group will experience reduced endurance in activities. These individuals should remain indoors and restrict activities.

(301-500)   Hazardous, General public and sensitive groups are at high risk to experience strong irritation and advice health effects that could trigger other illnesses.

A scientific basis in terms of attainment of air quality standards and dose-response relationships of various pollutant parameters have been derived and used in arriving at breakp

1) Disease According To Who Report

a) Outdoor air pollution-caused deaths – breakdown by disease

40% –Heart disease;

40% – stroke;

11% – chronic obstructive pulmonary disease (COPD);

6% - lung cancer; and

3% – acute lower respiratory infections in children.

b) Indoor air pollution-caused deaths – breakdown by disease

34% - stroke;

26% -

heart disease;

22% - COPD;

12% - acute lower respiratory infections in children; and

6% - lung cancer.

C. Steps Towards Environmental Cure

In recent years India has taken some steps such as tightening vehicle and factory emission standards and occasionally limiting the numbers of cars on N.D.'s roads. But they have done little about crop burning, garbage fires, construction dust and rampant use of dirties fossil fuels.

It goes without saying that pollution mitigation and prevention can yield large net gains both for human health and the economy. Study shows air quality improvements in the high income group or countries have not only reduced death from cardiovascular and respiratory diseases but also yielded substantial economic gains. According to the Lancet Commission Report – In US an estimated US 30 dollar in benefits has been returned to the economy for every dollar invested in Air Pollution Control since 1970, which is an aggregate benefit of 1.5 trillion dollar against an investment of 65 billion dollar. Thus to generate environmental awareness in the people following steps may be taken by the Government-

1) To take necessary steps to pull together data on disease and death caused by all forms of pollution.

2) Making pollution prevention on high-priority nationally and integrate it into country and city planning processes.

3) Mobilizing, increasing, funding and the international technical support dedicated to control pollution.

4) Establishing system to monitor pollution and its effect on health.

5) To build multi-sectorial partnership for pollution control.

6) To intensify research on pollution and pollution control.

7) To ensure application of appropriate technology.

8) To enhance public participation and awareness.

9) Make environment a public issue.

Ultimately the solution lies in re-establishing broken link between man and nature.

The responsibility of greening the country and preserving environment rests on all citizen of India. If they want to save themselves they must save environment by making environment pollution free.

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