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Enviormental Pollution

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ABSTRACT
Environment Pollution is one of the greatest problems today which is increasing with every passing year and causing crucial and severe damage to the earth. It has become a real problem since the beginning of the industrial revolution. It is the contamination of physical and biological components of the Earth / atmosphere system to such an extent that normal environmental processes are harmed. Pollution of the environment consists of five main types of pollution, namely air, water, soil, noise and light. Development activities such as construction, transport and manufacturing not only deplete natural resources, but also produce large quantities of waste which leads to air pollution, water, soil and the oceans; global warming and acid rain. This paper provides the insight view about the affects of environment pollution in the perspective of air pollution, water and land/ soil waste pollution on human and also provide the ways to save the environment with all these pollution.
Keywords: Environment Pollution, Air Pollution, Water Pollution, Soil Pollution, Land Pollution

I. INTRODUCTION

Human activities directly or indirectly affect the environment adversely. Pollution can be defined as the addition of unwanted materials in the environment due to human activities. Agents that cause environmental pollution are known pollutants. A pollutant can be defined as physical, chemical or biological unintentionally released into the environment that is directly or indirectly harmful to humans and other living organisms. Environmental pollution occurs when the environment can not deal with and neutralize harmful products of human activities in time without any structural or functional damage to its system. Environmental pollution is a global problem and its potential to affect the health of human populations is high [1]. Environmental pollution is a problem in both the developed and developing countries. Factors such as Population growth and urbanization still place greater demands on the planet and extend the use of natural resources to the maximum.

II. AIR POLLUTION

Air pollution is a result of certain industrial and domestic activity. An increasing use of fossil fuels in power plants, industries, transportation, mining, building construction, stone quarries led to the air pollution. Air pollution can be defined as the presence of any solid, liquid or gas, including noise and radioactive radiation in the atmosphere in such a concentration that can be directly or indirectly harmful to man or other living organisms, plants, property, or interfere with the normal environment processes.

Sources of Air Pollution: We have various sources for air pollution. These are burning of coal and coke, industrial emissions, Commercial activities, thermal power generation unit and last but not the least is transportation. Transportation is a major source of pollution causing the highest pollution in metropolitan cities in developing countries.

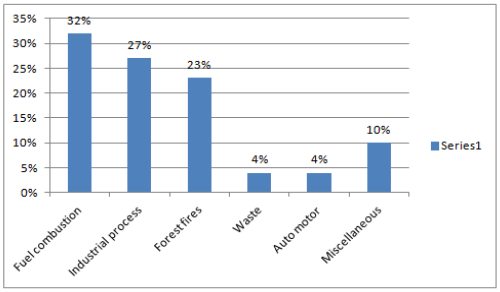

Figure1:-Sources of Air Pollution [2]

The above figure shows all the possible sources of air pollution in Developing Countries. The Environmental Pollution is unavoidable in Developing Countries. The impact of the pollution is worse in developing countries, leading to health problems, deaths and millions of disabilities each year. Developed countries have the resources and technology to fight against pollution. Because of the health risks and the potential impact of climate change, there have been efforts to reduce pollution. However, while it may be easy for the developed countries, the judgment of the environmental pollution can damage economic growth and competitiveness of developing countries whose economies depend on natural resources.

Most developing countries, particularly those in sub-Saharan Africa, depend majorly on natural resources for income and foreign exchange.

These economies are driven by funds from the exploitation of natural resources such as coal, oil and gas, agricultural and forest resources, gold, copper, etc.However, operation and treatment of some of these resources result in the environmental pollution and degradation. [5].

The World Health Organization recently published data on pollution in the world, focusing on lower airborne particles 2.5 micrometers (PM2.5) known. These particles come from coal plants and vehicles, and, at high levels, have been linked to serious respiratory problems.

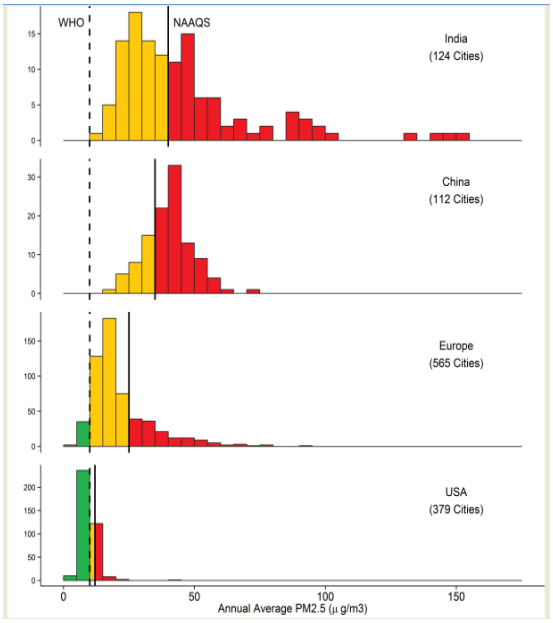

Figure 2: Compairing Air Pollution in Different Cities

The bars show the number of cities in each country with average annual PM2.5 concentrations in a given range. Bars in red cities shows exceed national air-quality standards (NAAQS).

Effect on Health Due To Air Pollution:-

The effects of air pollution are wide and impact our health in a variety of ways, both fatal and otherwise.

GASES	EFFECT ON HEALTH
Lead	Prolonged exposure can cause damage to the nervous system, digestive problems, and in some cases cause cancer. It is especially hazardous to small children.
Ozone	Exposure to this gas makes our eyes itch, burn, and water and it has also been associated with increase in respiratory disorders such as asthma. It lowers our resistance to colds and pneumonia
Oxides of nitrogen	This gas can make children susceptible to respiratory diseases in the winters.
Carbon monoxide	It combines with haemoglobin to lessen the amount of oxygen that enters our blood through our lungs
Sulphur dioxide	SO_2 in the air is caused due to the rise in combustion of fossil fuels. It can oxidize and form sulphuric acid mist. SO_2 in the air leads to diseases of the lung and other lung disorders such as wheezing and shortness of breath.
Nitrogen Dioxide	These gases irritate the airways of the lungs, increasing the symptoms of those suffering from lung diseases
SPM (suspended particulate matter).	Suspended matter consists of dust, fumes, mist and smoke. The main chemical component of SPM that is of major concern is lead, others being nickel, arsenic, and those present in diesel exhaust. These particles when breathed in, lodge in our lung tissues and cause lung damage and respiratory problems.

Figure3: Health Impact of Air Pollution

Control Measures Of Air Pollution:-

Activated carbon is one of the most popular fights against air pollution forms. This type of control involves the use of filter pollution, carbon, to reduce amount of pollutants that are allowed to escape into the air.

- The bio filtration is another type of effective control of air pollution. It uses microorganisms, often bacteria and fungi, to dissolve pollutants.
- Fuel Change: This technique involves the use of cleaner fuels to reduce air pollution. Fuel use low sulfur content instead of high power by sulfur fuel utilities.
- Nuclear power plants are relatively free of pollution compared to coal thermal power plants. However, they have been subjects of controversy in their overall environmental impact.
- Improve Dispersion: This approach is based on the concept that the dilution air contaminants before they reach the ground will lower the level to which the population is exposed.[3]

III. WATER POLLUTION

The addition or the presence of undesirable substances in water is called water pollution. Water pollution is one of the most serious environmental problems. Water pollution is caused by a variety of human activities such as industrial, agricultural and domestic. Rivers, lakes, seas, oceans and groundwater sources are polluted by point sources or non-point. When pollutants are discharged from a specific location, such as a drain pipe carrying industrial effluents discharged directly into a water body, it represents the point source of pollution. On the other hand Nonpoint sources include releases of pollutants from diffuse sources and more fields such as agricultural runoff, grazing, construction sites, abandoned mines and wells, roads and streets [4]. Most of the rivers in India are polluted due to industrial activity. Ganga is polluted by the provision of jute and sugar, Gomati is polluted with paper, Yamuna is polluted by insecticides. The Government of India has constituted Ganga River Authority to keep it clean.

Sources of Water Pollution:-The sources of water pollution are categorized into two main points:

1) Pollution Due To Pesticides and Inorganic Chemicals:-

- Pesticides such as DDT and others used in agriculture can contaminate water bodies. Aquatic organisms absorb pesticides from the water and enter into the food chain and move up the food chain.
- Metals such as lead, zinc, arsenic, copper, mercury and cadmium in industrial wastewater

adversely affect humans and other animals. Arsenic pollution of groundwater been reported in West Bengal, Orissa, Bihar, U.P. Consumption of such arsenic contaminated water leads to arsenic accumulation in body parts such as blood, the nails and the hair causes damage to the skin, rough skin, dry and thickening of the skin and, finally, skin cancer.

2) Thermal Pollution:-

Power plants- thermal and nuclear, other chemical industries use a lot of water for the purpose of cooling and hot water used is discharged in rivers, streams or oceans. The waste heat from boilers and heating processes increases the cooling water temperature. Discharge of hot water may increase the temperature of the water receiving 10 to 15 ° C above ambient temperature water. This is thermal pollution. Increasing the temperature of the water decreases the oxygen dissolved in water that adversely affects aquatic life. Hot water discharge water from power plants negatively affects aquatic organisms. [4]

Effects on Health Due To Water Pollution:-

Infectious diseases can be spread through contaminated water. Some of these water-borne diseases are Typhoid, Cholera, Paratyphoid Fever, Dysentery, Jaundice, Amoebiasis and Malaria.

Chemicals	Effect on human health
Pesticides	It can damage the nervous system and cause cancer because of the carbonates and organophosphates that they contain. Chlorides can cause reproductive and endocrinal damage.
Nitrates	It especially dangerous to babies that drink formula milk. It restricts the amount of oxygen in the brain and cause the "blue baby" syndrome
Lead	It accumulates in the body and damage the central nervous system.
Arsenic	It causes liver damage, skin cancer and vascular diseases
Fluorides	Excessive amounts can make your teeth yellow and cause damage to the spinal cord.
Petrochemicals	Even with very low exposure, can cause cancer.

Figure4: Health Impact of Water Pollution

Control Measures For Water Pollution:-

The following measures may be adopted against pollution of water:

(A) The water needs to be minimized by modifying the technologies involved.

(B) The water should be reused with or without treatment.

(C) The recycling of the water after treatment is to be carried as far as possible.

(D) The amount of wastewater discharge must be minimized. [4]

IV. NOISE POLLUTION

Noise pollution is the disturbing or excessive noise that may harm the activity or balance of human or animal life. The noise in industries such as stone cutting and grinding, speaker, movement of heavy transport vehicles, railways and airports leads to irritation and increase in blood pressure, loss of mood, decreased work efficiency, hearing loss which may be the first temporary but can become permanent in the stress of continuous noise. It is important that excessive noise is controlled. The noise level is measured in terms of decibels (dB).

Sources of Noise Pollution:- Sources of noise pollution are many and may be located indoors or outdoors.

1) Indoor Sources:- It includes noise from the radio, television, generators, electric fans, air coolers, air conditioners, various household appliances, and family conflict. Noise pollution in cities is more due to a higher concentration of population and industries and activities such as transportation.

2) External Sources:- It include the indiscriminate use of loudspeakers, industrial, automotive, rail, aircraft and activities such as those in the market place, religious functions, social and cultural, sports and political rallies. In rural areas agricultural machinery, sets of pumps are the main sources of noise pollution.

Effect on Health Due To Noise Pollution:-

Problem	Effect on Human Health
Hearing Problems	Constant exposure to loud levels of noise can easily result in the damage of our ear drums and loss of hearing. It also reduces our sensitivity to sounds that our ears pick up unconsciously to regulate our body's rhythm.
Health Issues	Excessive noise pollution in working areas such as offices, construction sites, bars and even in our homes can influence psychological health. Studies show that the occurrence of aggressive behaviour, disturbance of sleep, constant stress, fatigue and hypertension can be linked to excessive noise levels.
Sleeping Disorders	Loud noise can certainly hamper your sleeping pattern and may lead to irritation and uncomfortable situations.
Cardiovascular Issues	Blood pressure levels, cardio-vascular disease and stress related heart problems are increases due to noise pollution. Studies suggest that high intensity noise causes high blood pressure and increases heart beat rate as it disrupts the normal blood flow.
Trouble Communicating	High decibel noise can put trouble and may not allow two people to communicate freely. This may lead to misunderstanding and you may get difficult understanding the other person.
Effect on Wildlife	Wildlife faces far more problems than humans because noise pollution since they are more dependent on sound. Animals develop a better sense of hearing than us since their survival depends on it.

Figure5: Health Impact of Noise Pollution

Control Measures For Noise Pollution:-

The following steps can be taken to control or reduce noise pollution-

- Noise from road traffic can be reduced through better design and proper maintenance of Vehicles.
- Noise mitigation measures include creating noise mounds, noise abatement walls and Roads and smooth coating of well-maintained roads.
- Traffic noise of the air can be reduced by proper insulation and noise introduction, regulations for takeoff and landing aircraft at the airport.
- Industrial noise can be reduced by soundproofing equipment such as generators and producing regions lot of noise.
- Power tools, music and land mover's noisy, public functions using loudspeakers, etc. should not be allowed at night. Use horns, alarms, refrigeration units, etc. is of be restricted. The use of firecrackers is noisy and cause air pollution should be limit.

V. SOIL POLLUTION

Soil is one of the important and valuable resources of the nature. Life and living on the earth would be impossible without healthy soil. 95% of human food is derived from the earth. The soil is composed of 50% of organic and inorganic matters, and 50% of air and water which fills existing vacant spaces of the soil and keeps live organisms of the soil. Addition of substances which adversely affect the quality of soil or its fertility is known as soil pollution Solid waste is a mixture of plastics, cloth, glass, metal and organic matter, sewage, sewage sludge, building debris, generated from households, commercial and industries establishments add to soil pollution. The main reason why the soil becomes contaminated is due to the presence of manmade waste. The waste produced from nature itself such as dead plants, carcasses of animals and rotten fruits and vegetables only adds to the fertility of the soil. However, our waste products are full of chemicals that are not originally found in nature and lead to soil pollution [5].

Sources of Soil Pollution:-

1)Plastic Bags –Plastic is non biodegradable and burning of plastic in garbage dumps release highly toxic and poisonous gases like carbon monoxide, carbon dioxide, phosgene, dioxine and other poisonous chlorinated compounds

2) Industrial Sources – It includes fly ash, chemical residues, metallic and nuclear wastes.
Large number of industrial chemicals, dyes, acids, etc. find their way into the soil and is known to create many health hazards including cancer.

3) Agricultural Sources – Agricultural chemicals especially fertilizers and pesticides pollute the soil. Pesticides are highly toxic chemicals which affect humans and other animals adversely causing respiratory problems, cancer and death.

Effect on Health Due To Soil Pollution:-

Problem	Effect on Human Health
Organ Damage	The presence of heavy metals in soil in toxic amounts can cause irreversible developmental damage in children. Humans of any age may also suffer kidney or liver damage from exposure to excessive mercury in soil.
Bioaccumulation	Plants that are grown in lightly polluted soil continuously absorb molecules of the pollutants. Since the plants cannot get rid of these molecules, they accumulate in the plant, causing higher amounts of pollution to exist in the plant than in the soil.
Cancer	Many common soil pollutants are carcinogenic, or cancer-causing. According to the U.S. Environmental Protection Agency, humans who are exposed to these pollutants are far more likely to develop cancer than humans who are not exposed to them.
Economic Losses	soil pollution can also cause economic damage. For example, in some parts of China, soil that is polluted with heavy metals is nevertheless used to grow grain. The grain grown in these soils is often polluted with heavy metals.
Toxic Dust	The emission of toxic and foul gases from landfills pollutes the environment and causes serious effects on health of some people.

Figure6: Health Impact of Soil Pollution

Control Measures For Soil Pollution:-

- To control soil pollution, it is essential to stop the use of plastic bags and instead use bags of degradable materials like paper and cloth. Sewage should be treated properly before using as fertilizer and as landfills.
- The organic matter from domestic, agricultural and other waste should be segregated and subjected to vermicomposting which generates useful manure as a byproduct.
- The industrial wastes prior to disposal should be properly treated for removing hazardous materials
- Oil materials and their derivatives may cause soil pollution as a result of transport or storage. If more oil materials are penetrated into the more depth of soil, removing its pollution will be more difficult. So we should control the oil pollution in soil. [5]
- Apart from above these pollution there are many kind of other environment pollution which puts a bad effect on our health and environment.

VI. CONCLUSION

Environmental pollution is causing a lot of distress, not only for humans but also animals, driving many species in danger. In this document, we are aware with the different types of pollutants and their negative impact on our health and the environment. These pollutants affect humans, animals, plants and the atmosphere. Their effects are indeed numerous and varied. Excessive levels of pollutants cause a lot of damage to human and animal health. So we must do our best to protect our self and our environment from these pollutants. We must take all possible measures that have been outlined in the document above.

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