



Environmental Pollution- Its Impact on Planet Earth

Dr Nirlep Kaur

Associate Prof in Physical Education

G.N.N.College Doraha,Ludhiana,

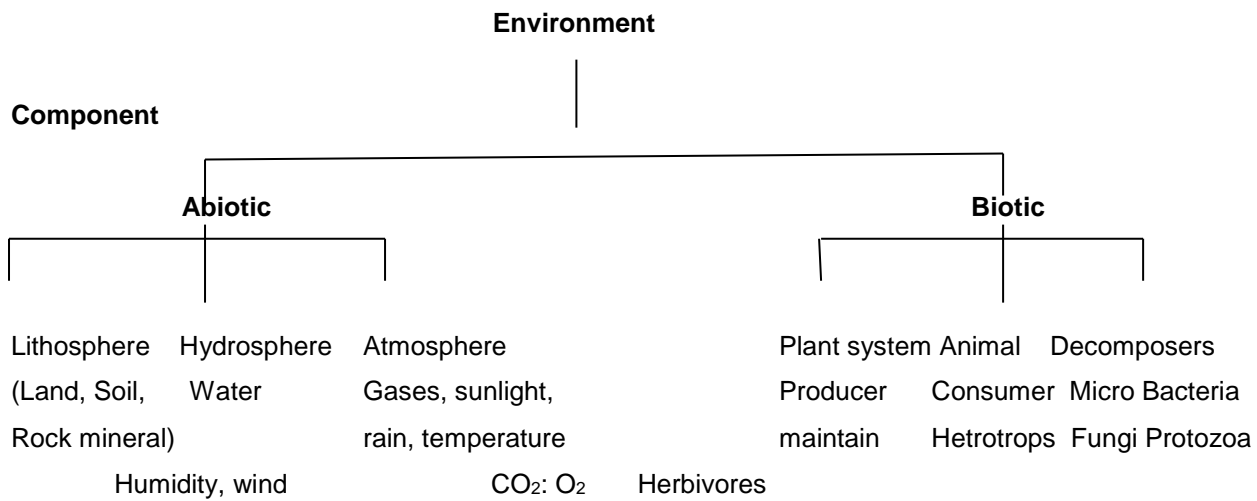
Abstract: Life and natural environment are closely related to each other. Without natural environment the creation, existence and survival of life is impossible and without life natural environment has no meaning. The animal, insects and trees contribute to conservation of natural environment and in return benefit from ecological balance. The human being too benefit from natural environment. But most of the times human beings forget their responsibility towards environment. Man's activities are influenced by nature and as the man came into existence, its first interaction was with nature and its surrounding conditions. So man (human being) and environment have close relationship and there has to be harmony between man and nature. This topic deals with meaning of environment, types of environment pollution its causes, treatment and also its effect on planet

Key Words: Environment, Nature, Ecological, Pollution

Meaning

The more we exploit nature, the more our options are reduced, until we have only one to fight for survival" [Morris K. Udall]. "We won't have a society if we destroy the environment." [Margret Mead]

The word environment refers to the immediate surroundings in which man (animal and plants) lives. Environ means surrounding and ment means actioning. Auctioning means the interaction between man and nature. Thus, environment means our surrounding and a variety of issues connected with human activity which effects nature and natural resources. There is interaction amongst man, animal, plants and nature. In other words, environment can be defined as 'the sum total of all conditions agencies and influence which affect the development, growth, life and death of organism, species or race. Although man is social animal but its thinking, ability and IQ separates him from other animals. Environment affects all living creatures but human being feels that environment affects him the most that is why human being interfere in natural environment more than animals. The interference of human beings creates more problems in environment. It has been observed that in the recent past, many changes have taken place in our environment because human is in his constant effort towards improving his living standard. Now our immediate concern is giving justice to our environment. Environment has two major components, i.e. Abiotic and Biotic.



Man has played a very important part in shaping his environment. He has been responsible for degrading the quality of his environment ever since he appeared on this earth. At first he contaminated the atmosphere by the use of fire which added gases, smoke and ash to it. When he settled into villages, town and cities, the situation gradually became worst. The environment was polluted by his activities from that time. Such as burning wood, tanning leather, primitive method of sewage disposal and so on.

Now days, due to new inventions, revolutions, coupled with urbanization, industries, factories many other impurities began to be added into the natural air, water as well as soil causing almost irreparable damage to environment. Many pollutants such as gases, particulates, agricultural chemicals and radioactive materials in atmosphere i.e. oil spill, soil waste on land are affecting the organisms directly or indirectly. In fact, the pollution has assumed distressing dimensions for the present as well as the coming generations.

Pollution:

The word pollution is derived from a Latin word pulluere which means 'to soil' or to defile. Pollution means an undesirable change in physical, chemical or biological characteristics of air, land and water that may or can harmfully affect the human, animal and plant life.

Pollution can be divided into two parts:

1. Degradable: The materials which do not degrade and is harmful in very small amount in the environment are called degradable pollutants.
2. Biodegradable: These elements cannot be degraded by natural processes. Once they are released onto environment they are difficult to eradicate and continue to accumulate e.g. toxic elements like lead or mercury and nuclear waste.

There are many types of pollutants which pollute the environment.

They can be divided into following:

Water Pollution

Water is polluted when some foreign substance is present in it which degrades its quality and makes it unfit or harmful for use.

"Our liquid planet glows like a soft blue sapphire in the hard-edged darkness of space. Therefore, it is nothing else like it in the solar system. It is because of water"John Todd.

Without water there would be no life but the polluted water affects the human, animal and plants life also. In polluted water pollutant can be organic, inorganic, biological or radioactive substances. There are many reasons of the pollution of water, i.e. as sewage, industrial and trade wastage, agricultural and related activities, oil spills, dumping of nuclear waste, urban waste water and physical pollutants. It was found that every year 3.5 million tons of oil is discharged into the sea. Around the world. 3 Young children die every minute in India due to dirty water. The following steps should be taken to treat the water pollution

Treatment of waste water, Population control, Educative measures, Legislation Change in living style. We should avoid bathing and washing directly in rivers, ponds etc., we should reduce the use of insecticides, pesticides etc., Sewage waste and domestic waste should not be thrown directly into the water bodies., Recycle the garbage and other solid waste, Use filtered water.

Soil Pollution

Soil is the uppermost part of the earth's crust and is believed to have been formed as a result of decomposition and disintegration of surface rocks due to weathering over a very long period of time. It might have been formed at far off distance but is carried by strong winds and rivers to different places.

The prosperity of nation depends upon the quality of its soil. It is the soil which provides nutrients, water and minerals for the growth of plant. In fact it is heart of biosphere.

Deterioration of the Quality Minerals, content of soil and decrease in plant growth in it is called soil pollution.

The reasons of soil pollution are industrial waste, urban waste, agricultural pollutant, pesticides, fertilizers, insecticides, herbicides, fungicides, farm waste, radioactive pollutant, biomedical waste, nuclear waste, dumping of ash.

The effects of soil pollution are:

- It reduces the soil fertility.
- It wastes the precious land resource which is limited.
- Poisonous substances also enter in the plants and deteriorate the nutrient values of crops.
- Poisonous crops consumed by human beings cause health hazards like cancer, ulcer and disorder of nervous system.
- It also affects the animals.
- Soil pollution leads to water pollution.

Controlling Measures of Soil Pollution

- Minimum use of pesticides.
- Awareness to people about cause and effects of soil pollution.
- We should not throw and dump the urban waste in the open.
- Industrial discharge should be treated before throwing.
- Waste can be recycled and utilized for useful purpose, e.g., producing electricity from urban waste, recycling of paper, plastic etc.
- There should be proper drainage system.
- Biometric waste should be burnt in the incinerators in hospitals itself.
- Use the agricultural waste for paper and hard board.
- Improvement in cropping technique.

Marine Pollution

Marine Pollution means the addition of pollutants in ocean by the human and natural activities. The main sources of marine pollution are rivers, catchment area, i.e., coastline, where human settlement in the form of hotels, industry, agricultural, oil drilling and shipment.

The effect of this pollution on human being also causes health problems like cancer which is transferred from water to fish and fish to man. Marine pollution also destroys the natural beauty.

- Stopping the discharge from industries urban areas.
- Banning the dumping of nuclear waste in the oceans.
- Improving the oil exploration.

Noise Pollution

Noise pollution means unwanted and loud sound leading to health problems. The development of the steam engine, petrol engine and technological machineries in industry in the nineteenth century resulted in increasingly noisy environment. Causes of noise pollution can be categorized into two types:

- i. Natural causes
- ii. Man made causes

Natural causes include earthquake, volcanic eruption, storm, thundering and lightening etc.

Man made causes are industries, means of transport, tractors, threshers, combine, domestic equipment, i.e., juicer, mixer, grinder, pressure cookers, coolers, fans, washing machines, exhaust fans, refrigerator, A.C., volt meters, entertainment sources i.e. music system, TV, DVD player, Radio, DJ system, theatre, cinema, walkman etc. Mining, firing and practice by armed force using guns, rockets, missiles, tanks etc. all are the causes of noise pollution.

Noise pollution affects the human health adversely.

- Effect of hearing ability (deafness)
- Psychological problems like change in behavior, lack of tolerance, lack of concentration, anxiety, stress, depression etc.
- It also causes irritation, sleeplessness, headache, high blood pressure.
- It affects nervous system, heart, respiratory problems, nausea, giddiness etc.
- Noise pollution also affects the behavior of animals.

The noise pollution can be controlled by:

- Awareness among the people.
- Use of silencer in the noise causing machines.
- Ban on using horn of vehicles.
- Heavy vehicles should not be allowed in residential areas.
- Restriction to use of loudspeakers.
- Industries should be away from residential area.
- Legislative measures should be implemented.

Thermal Pollution

The discharge of heated water in the river or lakes is called thermal pollution. **Causes of thermal pollution are:**

- Reduction of dissolved oxygen.
- Increase in toxicity.
- Change of species.
- Ecological balance of river is disturbed.
- It affects plant life.
- Interference with reproduction.
- Fish migration.
- Change in water properties.

Thermal pollution can be controlled through

- Cooling ponds, Spray ponds.
- Artificial lakes.
- Wet cooling towers, Dry cooling towers.

Nuclear Pollution

Nuclear pollution is the pollution of air, water or soil caused by nuclear radiation. Nuclear energy can be use both for peaceful as well as for harmful purposes. Causes of nuclear pollution are natural and manmade i.e.

- Extraction of minerals.
- Nuclear power plants.
- Nuclear test.
- Dumping of waste.
- Nuclear Medicine.

Effects of nuclear pollution are:

- It can cause skin burns, breast cancer.
- Damage of bone marrow, eyes, blood cells, spleen and other internal organs.
- Genetic damage- These genetic changes are passed on to next generation.
- Effects the plants and animals.
- Loss of life and property.
- Greater disaster, for example dropping of bomb at Hiroshima and Nagasaki in Japan in 1945.

Nuclear pollution can be controlled by-

- Development of new technology so that there is no leakage of radiation.
- Nuclear test should be banned.
- We should not develop and make use of nuclear weapons.
- Dumping of waste material should be done efficiently and properly so that there is no radiation.

The above said all pollutant pollute the atmosphere. Air pollution is also one of the most important factors for pollution.

(vii) Air Pollution: Air pollution stated ever since man started burning firewood. If we go to the history of air pollution that it could be traced back to the industrial revolution and the discovery of steam engine, in the eighteenth century increased use of coal and the smoke and sulphur compounds emanating from it began to contaminate the atmosphere more and more. But in the modern times it has become one of the major environmental problems.

Definition: WHO defined, Air Pollution as substances put into air by the activity of mankind in concentration sufficient to cause harmful effect to his health, vegetables, property or to interfere with the enjoyment of his property. Air pollution means the contamination of atmosphere and presence of physical, chemical and biological elements in the atmosphere that destroy the balance of gases in it.

Truly speaking there has never been pure air. Air is the closest component of environment for all lives. It provides oxygen for respiration carries sound and smell and helps in maintaining the body temperature. The air may contain disease causing organisms such as dust and smoke, which when inhaled, may cause sickness and at all places. The term air pollution is applied when there is excessive concentration of foreign matter in atmosphere which is harmful to man or his environment. The problem of air pollution was first brought to a sharp focus when air pollution epidemics took place in Los Angeles (1948) and London (1952). In the London, air pollution of 1952, many people became ill and 4000 people died within 12 hours.

Causes of Air Pollution :

Natural Causes: This kind of pollution occurred due to natural activity. These natural activities are volcano activity, forest fire, organic and inorganic decay, bacteria, spread by wind, gas release from marshes, sand and dust, extra terrestrial bodies, radioactive emission from the earth, pollen grain etc.

Man Made Sources: These are caused due to human activity. Human activity is more harmful for natural atmosphere. Air pollution increasing day by day due to increase in population, urbanization, motor vehicles, coal combustion, rapid industrialization, deforestation, burning of fossil fuels, agricultural activities, wars, domestic sources, mining activity, thermal power plant, industries, drugs used by man, miscellaneous.

The main pollutants in atmosphere are dust particles CO₂ (Carbon Dioxide), Carbon Monoxide, Sulphur Oxide (SO₂), Nitrogen Oxide (NO₂), Smog (Smoke), ground level ozone, peroxyacyl nitrate (PAN).

1. **Increased Population:** This is one of the major causes of pollution. More population means more needs, to fulfill the needs unnatural methods adopted by humans disturb the balance of the atmosphere.
2. **Urbanization:** Urbanization creates more pollution. Urbanized people use latest equipment in which more energy is consumed.
3. **Motor Vehicles:** Motor Vehicles are also prime cause of air pollution. Motor Vehicles including trucks, train, aircrafts, two wheelers, four wheelers, three wheelers, tractor, other motor transports contribute more for air pollution. Millions of vehicles produce poisonous gases through combustion of oil. A survey conducted on

eve of environment day, 1997 revealed that in Delhi 1400 tons of pollutants are generated every day out of which 1025 tons are contributed by 28 lakh vehicles.

4. **Coal Combustion:** Coal Combustion oil and other fuel is another source of smoke dust and sulphur dioxide carbon dioxide and so on. The London disaster was due to domestic coal burning.
5. **Rapid Industrialization:** Rapidly increasing industries are big source of air pollution specially, chemical and metallurgical industries, oil refineries, fertilizers factories etc. the industries use various kinds of fossil fuels, like coal, petrol, natural gases wood etc.
6. **Deforestation:** As the population is increasing day by day that is why human's needs are also increasing. To fulfill his needs man has been cutting trees rapidly without thinking its consequences. Trees exhale in oxygen and inhaling carbon dioxide. This has resulted in increase in the percentage of carbon dioxide and decrease in the percentage of oxygen in air. So, deforestation is also one of the major causes of air pollution.
7. **Tobacco & Smoke:** it is mainly produced by smoking cigarettes. It creates lung cancer, pulmonary and coronary heart diseases. Smoking directly affects to individual who takes, but indirectly affects to others when he/she smokes.
8. **Agricultural activities:** The pesticides added to soil or sprays done over the crops to protect it from diseases, pests, insects, the fumes carried by wind to different parts of the town or village where they give foul smell and affect the health of animal and human being. Similarly, activities like burning wheat and rice stalks, harvesting, thrashing, winnowing also cause the air pollution.
9. **Wars:** The nuclear weapons used during wars, during testing the weapons emit radiations which adversely affect health and prove to be fatal.
10. **Domestic Sources:** Domestic air pollution caused by pollutant emitted from houses in rural and urban areas wood, cow dung, fossil fuels like coal, kerosene, L.P.G. are used as domestic fuels for cooking. These release poisonous gases, i.e., carbon monoxide, carbon dioxide, sulphur dioxide, nitrogen oxide, hydrocarbons etc. domestic waste like garbage, sewage, etc. make neighborhood stinking and unbearable. These foul smells enter in air and pollute it worst.
11. **Mining Activity:** Some particles matter is added in the atmosphere during mining. These particles are coal, dust, limestone and iron etc.
12. **Thermal Power Plants:** Fossil fuels are used in thermal power plants to generate electricity. With increase in the demand for electricity we are setting up more number of thermal plants. Smoke soot, ash particles are released from the chimneys of thermal power plants and added into air.
13. **Brickiln:** Brickiln is also responsible for air pollution. Many dangerous gases and smoke come out from brickiln during making the bricks. These all enter in atmosphere and make it unhealthy.

Effects of Polluted Air :

Air pollution is a global problem. It affects developing countries more because there is unplanned industrialization and urbanization. India is one of them. Air pollution affects the human body more. The respiratory system is more affected systems by air pollution. The effect of Air Pollution is as:

1. **Effects on Human Body:** Chronic Bronchitis, Asthma, Reduces hemoglobin level in blood, irritates the eyes, nose, throat, skin, chest pain, cough, fever off and on, general weakness, Lung Cancer, Pulmonary and coronary heart disease, Loss of ciliated cells, Visibility, Worker from mills suffer from siberiosis, Lead released from vehicles affects children brain, Dizziness, Headache
2. **Effects on Plants:** Air pollution effects the growth of plant, Due to air pollution dropping of leaves, Damage the plant tissues, sometimes leaves turn yellow, Ozone results in rubber cracking, Carbon dioxide is major culprit for climate change.

3. **Effects on Animal Life:** When animals eat diseased plants affected by air pollution it damages their organs. Milk is also affected as it has poisonous substances which affect human being also.
4. **Effect on Building:** Building turn blackish or yellowish. Some of the monuments may be of historical and archaeological important like Taj Mahal is getting yellowish due to air pollution. For example Taj is being damaged by Mathura oil Refinery.
5. **Effect on Climate:** Global average temperature increasing by 7⁰ C over the last century. (ACC to IPCC) Inter Governmental Panel on Climate Change Global warming is due to increase of carbon dioxide in atmosphere. This is also due to the concentration of green house gases in the atmosphere, e.g. CFC (Chloroform Carbons) methane, nitrous oxide, CO₂ etc.
6. **Effect on Visibility:** Light scattered by particular matter results in poor visibility. Sunlight scattered by particulates illuminates air and reduces visibility.
7. **Effect on Ozone Layer:** 24 km above the earth there is thin layer of Ozone layer of atmosphere which protects us from UV (ultra violets) radiation is getting depleted due to pollutant like CFCs. A large hole in this layer has been caused over Antarctica and effect the human as: The size of eyes will small, The size of nose will longer ,The height will be smaller
8. **Acid Rain:** Due to air pollution the rain water that falls down on surface becomes acidic. This is due to mainly industrial regions. Many industries release waste water and this polluted waste water enters in rain water through canals and dirty nalas.
- 9 **Effect on Land:** Soil moisture reduced, Agricultural production can get a setback from reduced yield, Toxic gases slow down the process of photosynthesis.
- 10 **Effect on Social & Economic Aspect:** Air pollution affects the social and economic aspects of an individual and society. This is due to health problem of human beings.

Air Pollution Control (Measures)

The safety of three 'M's Man, Material and Machinery- must be the ultimate object behind the measures to control the environmental pollution problems. Pollution control measures should be considered as social responsibility and obligation not only by the concerned departments, but also by all who have faith in the need for preserving the valuable natural environmental resources. The implantation of the control measures should be based on the principle of recovery or recycling of the pollutants and must be taken as an integral part of production, i.e. never as a liability but always as an asset. Air pollution may be controlled by physical as well as by chemical methods.

Following steps can be taken to overcome/control the air pollution.

1. **Use of Purified Fuel:** The basic technology for the removal of sulphur from coal is already known but it has economic and legal implications. It is also possible to reduce the level of lead oxide in the air taking the lead out of the petrol.
2. **Modernization of out-dated industries and machinery:** We should switch off the outdated industries and machinery and adopt the latest technology.
3. **Plantation** Intensive plantation in the region considerably helps in reducing dust, smoke and other pollutants. It has been studied that trees with simple leaf, i.e. papal, pokur, banyan, teak, saal, mango, kachnar, etc. are more effective in removing dust particles suspended in the air than those of the trees with compound leaf, i.e. Ashoka, palaks, nim, sandal and gulmohar.
4. **Chemical Method:** This method is usually used for removing sulphur dioxide from air which comes from burning of coal.
5. **Air Cleaning:** Air cleaning devices should be use, e.g. gravity settlers', cyclone separator, wet collector and electrostatic precipitators.
6. **Substitution Method:** The method is based on the principle to substitute the offending material and processed by less offending ones.

- 7. Subsidies lead-free petrol:** Lead free petrol must be available at the lowest rate so that the vehicle users can be motivated towards toxic free fuel. People can be educated about the benefits of lead free petrol. The other ways and means are- To educate the people about causes and ill effects of air pollution, People should change their behaviors and life style. They should try to avoid those things which cause air pollution, Burning of crops residue should be banned, Enforcement of Air Pollution Act, 1981 should be strictly implemented, Industries should be set up away from residential areas at the same time there should be tall chimneys, Pollution check centers should do its duty properly, Use of pollution free fuel in automobiles like CNG, as has been done in Delhi, Optimum use of fossil fuels for various purposes, Use of public transport instead of individual vehicles, Controlling the deforestation, All our efforts should be made to reduce the contribution of pollution.

Role of an Individual in Prevention of Pollution

The above said environmental problems are caused by human actions on the environment. If we are to respond to these problems we have to recognize that each of us is individually responsible for the quality of the environment we live in. our personal actions can either worsen or improve our environmental quality. Many people feel that environment problems can be solved with quick technological solutions. Majority of individuals want cleaner environment, the major changes in their life style that would contribute to a clean environment. The right decisions and actions of individuals can lead to safe and pure environment. With the help of solar energy, natural processes developed over billions of years can indefinitely renew the top soil, water, air, forest, grassland and wild life on which all forms of life depends, but from long time or unfortunately we do not use these potentially renewable resources. Some of our waste can be diluted, decomposed and recycled by natural process. Natural processes also act as flood preventers. To control the environmental pollution every individual has some duties that contribute towards a better quality of human life. Each individual must try to answer four basic questions and must do something for environment.

What is my purpose and responsibility as a human being?

How am I connected to the earth and the other living things?

Where do the things that in consume come from?

What do I know about the place where I live?

Develop respect for all forms of life to do something for environment so every individual should plant a tree on his/her Birthday instead of exchanging the gifts, Reduce the use of wood and paper products, because these are made from trees, Try to recycle paper products, Don't buy furniture, doors or window frames made from hardwood such as teak because it is all made from forest wood, Help in restoring a degraded area near your home or join afforestation programme, In home pesticides use should be very limited, Advocate for organic vegetables, fruits. This will automatically help to reduce the use of pesticides, Switch off the lights and fans when not required don't use perfumes, air spray, air fresheners cause these all reasons damage the ozone layer. Instead of these steps we should have also take following steps as:

- Use the household goods for longer time and have them repaired as far as possible instead of disposing of them. That kind of products could pollute groundwater.
- Buy consumer goods in refillable glass containers instead of cans or throwaway bottles.
- Use rechargeable batteries.
- Avoid asking for plastic carry bags when you buy groceries or other items. Use your own cloth bag.
- Use washable cloth instead of napkins.
- Don't use disposable glasses, cups and plates.
- Recycle all newspaper, glass, aluminum and other items accepted for recycling in your locality.
- Put the dustbin in your garden.
- Try to lobby for setting up garbage separation and recycling programs in your area.
- Choose the items without packing.

- Don't throw the waste material on roads. Put it into dustbins or bring it back home with you where it can be appropriately disposed.
- Organize small local community meetings to discuss positive approaches to pollution prevention.
- Learn about the biodiversity.
- When talking to elected officials always be courteous and reasonable. You may disagree with that position. Take care to put into practice what you preach. Remember environment protection begins with human.

Conclusion

At last it is concluded that it is the human being who destroys and pollutes our beautiful nature but it is still time, time to think about what is already lost and what to do. There are many precautions and remedial measures by which we can save our environment. It is rightly said that we won't have any society and life if we destroy our environment. It is human being only who can save its life and animals and other objects. So wake up! Wake up! Human beings, still we have time. Don't let go the beautiful nature. But still there is time, time not to lament over our past but to think positively about the present and frame a healthy and clean future.

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