

**RESEARCH PAPER****Environmental Pollution and Protective Measures to Combat it****Anu Rastogi**

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Email: dranurastogi11@gmail.comReceived: 19th Jan. 2018, Revised: 21st February 2018, Accepted: 25th February 2018**ABSTRACT**

Every life on earth is responsible to run this universe and all lives are inter-related too. The only planet in the whole universe, which supports life is Earth. The word 'Environment' stands for surroundings. The environment of earth has proved to be fruitful for the existence, growth and development of all human beings. To fulfil the minimum requirement of human like food, housing and energy, environmental resources are being overused at a very fast pace. The overuse of resources for a far stretched period has created extreme environmental troubles like climate change, global warming, deforestation, depletion of fossil fuels and ozone layer are a few to name. Pollution is defined as 'the presence in or introduction into the environment of a substance which has harmful or poisonous effect'. Pollution disturbs our ecosystem and the balance of the environment. Here in this paper we will throw light on pollution, its cause and impact and ways to protect the environment from pollution.

Key words: Environment, Pollution, Protective Measures

INTRODUCTION

"A nation that destroys its soil destroys itself. Forests are our lungs of our land, purifying the air and giving fresh strength to our people."
- Franklin Roosevelt (US President)

In the modern era, the problem of pollution is increasing day by day. It is the biggest challenge the world is facing today. Environmental pollution occurs when changes in the physical, chemical and biological constituents of the environment are produced. As the society developed and the population grew; grew urbanisation, industrialization along with the economic development that resulted in the shrinkage of natural areas. Both the developed and developing countries share this burden equally.

Environmental pollution occurs in two ways: Natural & Man-made. Natural includes earthquake, volcanic eruptions, landslides, flood, droughts, hailstorms etc. Manmade includes waste disposal, industrial production, energy generation etc. Man-made destruction is much dangerous than the one caused by nature and it is a serious threat to the future of mankind.

When we look back into the history it was by the middle of the 20th century, people started to think about the protection of air, water and land environment from pollution, but not much could be done. In the USA, over 40% rivers and lakes are polluted for fishing, bathing and aquatic life the reason being the untreated industrial waste and sewage are being discharged into waters. One third of the top soil in the world is degraded due to the improper agricultural and industrial practices and deforestation. The global environmental pollution, air, water and land, soil pollution is considered as international public health problem.

KINDS OF POLLUTION

Environmental pollution can be classified into:

1. Natural pollution: environment is polluted often by natural phenomenon such as earthquakes, floods, drought, hailstorms, etc.
2. Anthropogenic pollution: Human activities.

The environmental pollution can also be classified further as Air pollution, Water pollution, soil pollution, noise pollution and radio-active pollution etc.

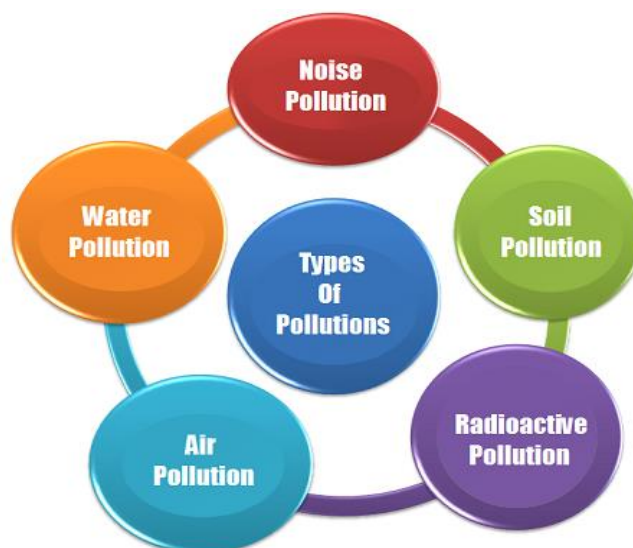


Fig. 1: Types of environmental pollution

AIR POLLUTION

It is the introduction of various gas, finally divided solids, aerosols at rates that exceed the natural capacity of environment to dissipate or absorb them. It decreases the air quality by creating an imbalance in the natural components of the air. Metal pollutants are cadmium lead mercury silica and radioactive elements.

Table 1: Sources and health effects of Air pollutants

Name of the pollutant	Sources	Health Effects
Nitrogen oxides	Industries, power plants, vehicles	Asthma and bronchitis
Carbon monoxide	Burning of fossil fuels	Unconsciousness and death
Carbon dioxide Suspended particles	Burning of fossil fuels mainly in industries, vehicles, power plants	Vision problem, headache and heart strain. Reduces development of RBC and pulmonary malfunctioning.
Sulphur dioxide	Industries and power plants	Irritation in eyes and throat, allergies, cough, asthma etc.
Smog	Vehicles and industries	Respiratory and eye problems
Hydrocarbons (gases)	Burning of fossil fuels	Carcinogenic effects on lungs. Irritation in respiratory systems, kidney problems
Chlorofluorocarbons	Refrigerators emission from jets.	Depletion of ozone layer, global warming, skin cancer

WATER POLLUTION

Table 2: Sources and agents of Water pollutants

Pollutants	Source	Name of agents
Infectious agents	Human and animal waste	Viruses, bacteria, protozoa and parasitic worms
Oxygen demanding waste	Sewage, feedlots, paper mills, food processing mills	Organic debris and aerobic bacteria
Plant nutrients	Sewage, manure, agriculture and landscaping runoff	Nitrates, phosphates
Inorganic chemicals	Surface runoff, industrial effluents, research lab effluent and household cleaners	Acids, metals, base and salts.
Radioactive materials	Coal and power plants	Iodine, uranium, thorium etc.
Organic chemicals	Industrial effluents, household cleaners, runoff from farms and yards	Oil, gasoline, plastics, solvents and detergents.
Eroded sediments	Soil and salts.	

According to WHO the polluted water is when the composition of water has been changed to the extent that it is unusable; the water body becomes toxic such that it cannot be drunk or used for other essential purposes.

EFFECTS OF WATER POLLUTION:

The following are the effects of water pollution are:

1. This poses a threat to the health of humans, animals and birds. It causes diseases like typhoid, jaundice, cholera, gastric.
2. This causes damage to various fauna and plant species.
3. This increases the scarcity of drinking water, as rivers, canals and even underground water gets polluted.

NOISE POLLUTION

Noise can be defined as 'unwanted sound dumped into the atmosphere without regard to the adverse effects it may have.' High intensity sound, such as emitted by different industrial machines and aircrafts, is not only disturbing to man but also damage hearing permanently. Hence, noise is a serious pollutant and a grave threat to our environment.

Table 3: Causes and effects of Noise Pollution

Causes	Effects
Urban planning, industrialization	Psychological disorders, Brain damages
Public transportation, cars	tinnitus
Construction	Stress & annoyance
Domestic appliances	Hearing problems
Agriculture	Cardiovascular diseases
Alarm systems, military	Communication issues, sleeping issues
Storms, rainfall and thunder	Effects on plants and animals

SOIL POLLUTION

Soil pollution occurs when soil is contaminated with high amounts of hydrocarbons, heavy metals, herbicides, pesticides and chlorinated hydrocarbons and hydrocarbons. It adversely affects the physical, chemical and biological properties of soil and reduces productivity.

Table 4: Causes and effects of Soil Pollution

Causes	Effects
Agriculture, excessive use of fertilizers & pesticides, deforestation	Health effects, effects on microorganisms, animals.
Industrial processes, leaks & spills, littering	Effects on the fertility of plants, effects on the growth of plants, reduction in crop yields.
Waste disposal, chemical waste, nuclear waste	Effects on aquatic life, contamination of groundwater, increase in algae.
Illegal dumping	Changes in pH level.
Mining, construction	Effects in soil structure.
Transportation	Dust and air pollution.

RADIOACTIVE POLLUTION

Radioactive contamination is the deposition of or presence of radioactive substances on surfaces or within solids, liquids or gases (including the human body), where their presence is unintended or undesirable (International Atomic Energy Agency definition).

Table 5: Causes and effects of Radioactive Pollution

Causes	Effects
Nuclear fuel cycle	Transportation issues
Weapon decommissioning	Storage issues
Medical purposes	Long- term contamination of storage spaces
Legacy waste	Scavenging
Industrial waste	Nuclear accidents
Wars	Health effects and social costs
Natural nuclear waste sources	Effects on nature

PROTECTIVE MEASURES TO PREVENT ENVIRONMENTAL POLLUTION

Environmental protection is a practice of protecting the natural environment on individual, organizational and governmental levels, for the benefit of both the natural environment and humans.

1. PROTECTIVE MEASURES TO COMBAT ENVIRONMENTAL POLLUTION ON INTERNATIONAL LEVEL:

A number of treaties and conventions have been signed and adopted by different countries around the globe to protect the environment from further deterioration. International organisations are also playing an important role in the same direction.

Few international treaties and conventions for the improvement and protection of the environment are mentioned below:

- Montreal protocol , September 1987
- Kyoto protocol: It was adopted in 1997 and came into force in 2005.
- Paris agreement: The Agreement came into force on 4th November 2016 and has been signed by 197 countries.
- Kyiv Protocol: It was adopted in 2009.
- Vienna Convention: It was adopted in 1985 and came into force in 1988.
- Aarhus Convention, October 2001
- Berne Convention, June 1982
- Convention on Biological Diversity, 1992 (CBD)
- Minamata Convention on Mercury, August 2017
- Ramsar Convention on Wetlands, December 1975

International organizations concerned with the environment degradation:

- Earth System Governance Project (ESGP), 2009
- World Nature Organization (WNO), 2014
- United Nations Environment Programme (UNEP), 1972
- International Union for Conservation of Nature (IUCN), 1948
- Global Environment Facility (GEF), 1991

2. PROTECTIVE MEASURES TO COMBAT ENVIRONMENTAL POLLUTION ON NATIONAL LEVEL:

The Constitution of India laid down various provisions regarding the role of the Central and State governments towards Environmental Protection. Some of them are:

- Article 48-A: The state shall endeavour to protect and improve the environment and to safeguard the forest and wildlife of the country.
- Article 51-A (g): It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers, and wildlife and to have compassion for living creatures.
- Article 21: No person shall be deprived of his life or personal liberty except according to the procedure established by law.

National organisations concerned with environment:

- The Ministry of Environment and Forests (MoEF)
- Central Pollution Control Board
- Indian Board for Wildlife (IBWL)

3. PROTECTIVE MEASURES TO COMBAT ENVIRONMENTAL POLLUTION ON INDIVIDUAL LEVEL:

- Minimizing wastage of resources such as electricity. People should always switch off appliances when not in use.
- Walking or use of cycles instead of using motor vehicles, especially when distances to be travelled are small can also be beneficial.
- Using of public transport (buses, trains, etc) instead of using personal vehicles.
- Opting for carpool, instead of going in individual personal vehicles.
- Regular pollution checks of vehicles at authority approved centres.
- Individuals should reuse items whenever possible.
- Products made from recycled material should be given preference.
- Using of jute instead of plastic bags.
- Taking part in environment conservation drives such as tree planting drives, Awareness drives
- Use water resources efficiently.
- Use renewable resources such as solar heaters, solar cookers.
- Proper disposal of harmful products such as cells, batteries, pesticide containers, etc.
- Limiting the use of refrigerators as they are the main source of CFC, which lead to Ozone layer depletion
- More population means utilization of more resources that imply more pollution, hence, family planning.
- Avoiding noise producing activities such as listening to loud music.
- Use handkerchiefs instead of paper tissues.

CONCLUSION

It is the need of the hour that people, government, NGO's etc. join the hands together to cater to environmental degradation which is getting worse day-by-day due to the ignorance of the people towards the environment. Environment can only be protected when the people show the required enthusiasm and willingness to protect and conserve the environment.

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