Volume : 3 | Issue : 5 | May 2014 • ISSN No 2277 - 8160

Research Paper | Social Science

Pollution and Health

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ABSTRACT

The environment is made up of air, water and land, technically known as atmosphere, hydrosphere and lithosphere respectively which together constitute the biosphere. In the biosphere, apart from human beings, plants, animals, birds, fishes, insects and microorganisms (algae, bacteria and virus) also exist. The atmosphere provides oxygen, while the hydrosphere and lithosphere provide food, water and space. Whenever a change, physical or chemical, occurs in the atmosphere, hydrosphere or lithosphere, all living beings are affected. This change is termed as pollution and the agents that institute these changes are called pollutants.

KEYWORDS :

➢ Pollution

Pollution is any undesirable change in the physical, chemical or biological characteristics of air, water or land. Pollution can harm the health and threaten the survival or activities of human beings and other living organisms.

It is difficult to estimate the desirable and undesirable effects of any activity which alters the environment. Sometimes short-term gains can cause immeasurable damage in the future, as seen in the case of use of nuclear energy, motorcars, air-conditioners and refrigerators, etc. In an age of fast material change, pollution is an unavoidable result. History has shown that societies pollute first and pay later. As the decline of the biosphere continues unchecked, people must find the will to force governments and industries to change existing conditions.

➢ Types of pollutants

Degradable pollutants are those that can be decomposed, removed or consumed or reduced to acceptable levels either by natural or artificial means. However, pollutants such as human sewage and animal and crop wastes can decompose only if the system is not overloaded. Certain chemicals decompose slowly, and can persist at harmful levels for decades like detergents and pesticides.

Nondegradable pollutants include many radioactive materials, heavy metals and some plastics which cannot be degraded by natural or artificial means. They must be controlled or prevented from reaching the environment.

Type of pollution	Pollutant
Air pollution	suspended particulate matter, sulphur dioxide, oxides of nitrogen, etc.
Water pollution	microorganisms, fluoride, cyanide, sulphate, etc.
Soil pollution	heavy metals like arsenic
Food pollution	pesticide, microorganisms, lead, cadmium, etc.
Noise pollution	industrial activity, traffic, loudspeakers

➢ AIR POLLUTION

Clean air, which is essential for the survival of all living organisms, is rapidly becoming scarce. At mean sea levels air contains 20.94% oxygen and 78.09% nitrogen. Other elements present comprise less t han one percent of its composition.

Air pollution can be due to natural or man-made causes. The former is beyond our control as natural disasters like dust storms, earthquakes and volcanic eruptions throw up large quantities of dust and gases into the atmosphere. Man-made causes, however, should be prevented or controlled as they pose a greater danger by way of toxic emissions from factories, power plants, vehicular traffic, etc. Industries such as mining, thermal plants, brick kilns, etc. also pollute the air. These emissions are particularly intense in urban conglomerations where the density of human habitation is very high.

➢ WATER POLLUTION

Like clean air, fresh water is also becoming a scarcity. The limited availability of fresh water and its unequal distribution make water pollution a matter of great concern. Water pollution is generally localised and confined, making it more severe. The pollutants undergo many reactions and can become hazardous. 70 % of India's fresh water is polluted, including several high altitude lakes. While water pollution is easier to study and manage, its control is highly complex and very costly.

➢ Sources of water pollution

In underdeveloped countries, sewage is a major source of water pollution. Human excreta contains 400 different species of bacteria and viruses. Even well-treated sewage contains pathogenic bacteria and virus, unless properly chlorinated before being discharged into any water course. Sewage is a major contributor to water-borne diseases and affects the health of people and other organisms in the environment in many way Industrial effluents from sugar factories, distilleries, tanneries and paper industries are accompanied by very high organic loads. By-products of paper and pulp industry cause depletion of fish upto as far as 40 km downstream. The wastes from oil refineries and steel industries contain phenol which imparts a strong odour, apart from poisoning the water body. Fertiliser industry wastes contain ammonia, urea, phosphate and sulphate which, in water, cause algal bloom and are toxic to aquatic fauna and flora. Alkaline industry wastes contain mercury which can kill human beings who consume mercurised fishes. Lead generated from battery, printing, petrol and paste-processing industries, trace and toxic elements such as zinc, copper etc., and effluents from mining industries are injurious to aquatic organisms.

Water in which maximum permissible concentration of any single or more constituents is in excess is unfit for drinking and human health.

➢ SOIL POLLUTION

Land is a very valuable but limited resource, as the population increases rapidly. Many highly urbanised cities are faced with acute space problems, as in Calcutta or Bombay. Besides the limited availability of land, 175 million hectares of land are becoming less productive every year. India loses 20 tons of topsoil per hectare in a year due to floods, rainfall and deforestation. 20 % to 50 % of lands under irrigation can go out of cultivation at this rate because of water logging and salinity.

This scenario of desertification is compounded by pollution which includes

- indiscriminate discharge of industrial effluents on land and into water bodies

- an increase in the use of fertilisers for agriculture
- open defecation by animals and human beings
- accumulation of solid waste; this is a major problem in developed countries like India where the garbage and refuse products are not degraded
- radioactive substances from nuclear plants which are released into the soil

➢ FOOD POLLUTION

Removal of nutrients or the addition of adulterants into the food chain will also harm our health.

➢ Sources of pollution

Adulteration: Foreign substances are deliberately mixed with food materials for economic gain.

Environmental pollution: Undesirable substances enter the food chain through agencies such as contaminated fish and food, microbes, chemical pollutants in water including fluoride, lead, tin, cadmium, etc.

Pollution of food comes from the pollution of water and soil. If that is prevented, our food will be nourishing and healthy and fit for eating.

➢ NOISE POLLUTION

Noise is unwanted sound and has become a part of urban life and industrial centres in this century. Noise pollution may come from loudspeakers, factories, aeroplanes, moving trains, construction activity or even a Noise level of 80 decibels or more for more than 8 hours a day increases tension and changes in breathing patterns. Continued exposure to high levels of noise results in fatigue, hearing loss or even total loss of hearing, changes in blood circulation, changes in breathing, etc. Noise pollution above 120 decibels can cause many adverse biochemical changes. Cholesterol levels in the blood and white cell counts increase, besides causing hypertension.

➢ Control of noise pollution

- A green-belt effectively reduces the noise.
- A 20 foot wide plantation inside the compound protects the house from the noise of vehicular traffic.
- Decibel metres should be installed along highways and in factories to check and control the intensity of noise pollution.

We have poisoned the air, water and soil with pollutants and have upset natural communities in ways that are affecting our place in the complex system that has come to be known as "the great chain of life". We may soon be tipping the balance of the natural forces in the land, atmosphere and oceans in ways that could be disastrous for mankind. In fact we have reached a point where we must protect the environment in order to protect ourselves.

In India alone, stupendous amounts of air pollutants enter the atmosphere per annum. The pollutants comprise of 50 lakh tonnes of particulate matter, 30 lakh tonnes of sulphur dioxide, 10 lakh tonnes of carbon monoxide and 22 lakh tonnes of hydrogen sulphide. Chennai too is one of the four metropolises to suffer the consequences of polluted air, though the greater effect can be felt in north Chennai where the industries are clustered together.

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