

ENVIRONMENT AND RADIATION POLLUTION

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Abstract: Any change in physical, chemical or biological characteristics of the environment that has the potentiality to harm human life, life of other desirable species, natural resources, cultural assets and industries is known as environmental pollution i.e., addition of harmful substances to the environment is called pollution. In Radiation process the radiant energy is transmitted from one place to another. In Electro-magnetic waves helps to occur this process. There are so many types of radiation which affects on human life. Depending on the frequency or wavelength of waves radiations are divided several types. Higher the frequency or lower the wavelength of a radiation, higher will be its energy. This higher energy of the radiation will cause higher damage to the living organisms. The harmful substances that cause pollution are called pollutants. Different types of pollution are found. They are: soil pollution, noise pollution, thermal pollution, marine pollution, nuclear hazards or radioactive pollution. The main objective of this paper is (ii) to study the causes and effects of various types of environmental pollution and radiation pollution. People should be aware of the pollution.

Keywords: *Environment, Pollution Pollutant, Radiation.*

INTRODUCTION:

All the living and non-living things in our surroundings make up our environment. We human beings have done our best to make our life comfortable. While doing so, we are making many changes in the environment. For example, as the number of people is increasing day by day, we are making more and more houses, roads and factories. To get more land for these, we are cutting down forests. We are also cutting down trees to make different parts of buildings, furniture and paper. When we cut down forests, many animals also the place the live in. as a result, many of them die, Forest keep the earth cool and also bring rain, So, cutting them down causes changes in the weather. Roots of trees hold the soil together. So, cutting down forests also leads to soil erosion. Radioactive minerals, Cosmic rays, various ionizing and non-ionizing agents are also play vital role for pollution and this affect on human body seriously.

OBJECTIVES:

The main objectives of this paper are:

1. To know about the environment;
2. To study the causes and effects of various types of environmental pollution and radiation pollution;

ENVIRONMENTAL POLLUTION:

Any change in physical, chemical or biological characteristics of the environment that has the potentiality to harm human life, life of other desirable species, natural resources, cultural assets and industries is known as Environmental Pollution i.e., addition of harmful substances to the environment is called pollution. The harmful substances that cause pollution are called pollutants. Different types of pollution are found. They are:

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|----------------------|--|
| i) Soil Pollution | ii) Noise Pollution |
| iii) Odour Pollution | iv) Thermal Pollution |
| v) Marine Pollution | vi) Nuclear Hazards or Radioactive Pollution |

In the following we discuss about the radiation pollution and noise pollution pollutions one by one:

Radiation POLLUTION:

Radiation pollution is common pollution of human life and man has little control of the radiation controlling agents. These are the radiations which induce the ionization of atoms and molecules. An atom is ionized when energy supplied to it separates one or more of its electrons. Ionization of a molecule produces two fragments. The radiation disturbance is mainly caused by non-ionizing radiation. Alpha (α), beta (β), and gamma (γ) radiations are mainly responsible for radiation disturbance. Alpha radiation contains energetic α -particles. Each alpha particle carries two units of positive charges and interacts strongly with living tissues. Beta radiation is made up of energetic electrons. Each beta particle carries one unit of negative charge and interacts strongly with matter. And gamma radiations are made up of high energy photons. Photons bring about strong electro-magnetic interaction with matter.

SOURCES OF Radiation POLLUTION:

The sources of radiation disturbances in the atmosphere are mainly natural but partly manmade.

The natural sources of radiation are as follows:

1. Radioactive minerals
2. Cosmic rays and
3. Radio nuclides.

The sources of several disturbances are discussed in the following ways:

1. Radioactive Minerals:

The radioactive elements such as minerals containing Uranium- 235 (U), Uranium-238 (U), Thorium-232 (Th), Plutonium- 239 (Pu) etc. are treated as main sources radiation which are capable of emitting energetic radiations.

2. Cosmic Rays:

The cosmic rays containing highly energetic particles reach the surface of the earth causing disturbances on human beings . The intensity of cosmic rays depends on latitudes and altitude of the place. The intensity is maximum at the poles and minimum at the equator.

3. Radio nuclides:

The unstable radio-nuclides in the atmosphere can be splitted up into smaller parts emitting energetic radiation. The smaller radio-nuclides enter into the body of organism along with air during respiration.

The several manmade radiation disturbances are:

1. Nuclear power plants
2. Radio-active wastes
3. Nuclear explosions and
4. Radio-isotopes.

1. Nuclear Power Plants

Nuclear power plants emit radiation to a very smaller extent except accidental Leaks.

2. Radio-active Wastes:

The nuclear power plants produce a lot of nuclear radio-active wastes. The disposal of these wastes has become a global problem. Some countries producing large quantity of nuclear wastes dump them in ocean near other countries.

3. Nuclear Explosion:

During nuclear explosion, a large number of radio-nuclides are generated in the atmosphere. The radio nuclides settle down with rain contaminating the soil and water bodies. Finally, these enter into food chain causing serious difficulties to the living organisms.

4. Radio-isotopes:

Radio-isotopes are also prepared by artificially either by nuclear fusion or by nuclear fission. If these radio-isotopes are not properly handled, these emit radiations causing disturbance.

NOISE POLLUTION:

The term noise pollution signifies the vast cataphony of sounds that are being produced in modern life leading to health hazards. Noise can be defined in many ways. Some of the definitions of noise are narrated below.

1. In general, noise means any disagreeable or undesired sound. Perhaps a better definition of noise is wrong sound in the wrong place, at the wrong time. The definition is subjective because of the fact that one man's pleasing sounds may be another man's noise.
2. Noise is air-borne mechanical energy striking the human ear drum. It may be defined as sounds, generally of random nature, the spectrum of which does not exhibit clearly defined frequency components.

SOURCES OF NOISES POLLUTION:

The noise pollution may be broadly classified under the following categories.

1. Transport noise
2. (ii) Machinery noise
3. (iii) Domestic and neighbourhood noise

1. Transport Noise:

Transport noise can be divided into three types. They are:

- (i) Surface transport which is the main source of noise pollution. Ever growing vehicular population, heavy traffic, urban crowd are responsible for noise pollution in the environment.
- (ii) Rail transport noise: the effect of noise pollution of rail is not very much severe as the rail transport generally occurs outside the residential locality.
- (iii) Air transport noise: The intensity of frequency of noise is much higher than that of noise generated from surface transport.

2. Industrial Machinery:

The noise is mainly produced by industrial machines and processes which affect millions of people.

3. Domestic and neighbourhood Noise:

Domestic and neighbourhood Noise may cause disturbance and annoyance to the general public in their homes and their lawful occasions. Loud TV, radio sets, room coolers, washing machines, vacuum cleaner, sounds speaker's transistors etc. on the other hand, neighbourhood noise generated from ventilation and air conditioning plants in buildings of all kinds. Moreover, noise from demolition, construction and road works.

EFFECT OF NOISE POLLUTION:

1. Noise pollution cause can cause headaches, loss of sleep and hearing.
2. It can also cause loss of memory.

LAND POLLUTION:

When people throw waste from homes and factories on land, it causes land pollution. Too much use of pesticides and fertilizers also pollutes the land. Soil has tiny living things called bacteria. They can help some types of waste to rot and mix with the soil. This type of waste is called biodegradable waste. Fruit and vegetable peels, leaves and things made of paper and wood are examples of biodegradable waste. This waste does not mix with the soil. It harms the soil. Plastic, rubber, glass and metals are examples of non-biodegradable waste.

EFFECT OF LAND POLLUTION:

There are so many impact of land pollution. They are:

1. Insect and animals gather around piles of dirt on land and spread germs and diseases.
2. Chemicals and fertilizers and pesticides are harmful to the useful bacteria living in soil. When these bacteria die, the quality of the soil reduced.

CONCLUDING REMARKS

Several countries emphasized on the need for intelligent and planned approach to the developmental activities so that they do not damage the natural environmental balance. In case of radiation pollution care should be taken to check manmade radiation disturbance at source and nuclear reactor should be perfectly maintained to stay away from accidental leakage. The government of India is deeply aware of environmental pollution as well as radiation pollution to prevent environmental degradation.

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