

ENVIRONMENT POLLUTION, ITS CAUSES AND EFFECTS : THE ROLE OF ENVIRONMENT EDUCATION

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Introduction:-

The environment is viewed differently by different subjects, experts and environmentalist. Each and everyone living organism has its specific surrounding medium of environment to which it continuously interacts and remains fully adapted. Environment refers to surroundings those natural things around us from the essentials which sustain human life such as the earth's atmosphere or healthy air or drinkable water, to the non-essentials that never the less makes life sustainable, such as wild animals, clean places or human living places thus we can say that environment is a dynamic complex and interconnected system in which any action in one part affects the other.

Definition and Meaning:-

“Environment is the sum of all social, economical, biological, physical or chemical factors which constitute the surroundings of man, who is both creator and moulders of his environment”.

C.C.Park(1980)”refers to the sum total of conditions which surround man at a given point in same space and times”.

A.Goudie(1984)”environment is the representative of physical components of earth wherein man is the important factor influencing his environment”.

What is pollution?

The term pollution is derived from the Latin word ‘Pollutionen’ which means defilement. Any undesirable change in air, water, soil, or food that threatens the health, survival, capability or activities of humans or other living organism is called pollution.

The Roya Commission on environmental pollution in UK in its third report defines pollution to mean “the introduction by man into the environment of substances or energy reliable to cause hazards to human health, harm to living resources and ecological systems, damage to structure or amenity or interference with legitimate uses of the environment”.

The Indian Environment Protection.. Act 1986 the expression “Environment Pollution”

means the presence in the environment of any environmental pollutant.

What is Pollutant?

The materials which cause the pollution of the environment are called pollutants. The substances that cause pollution are known as pollutants.

Types of pollutants:-

- 1) Primary pollutants- Sulphur dioxide, Carbon monoxide, Heavy metals .etc. These are presented in the same form in which these are added by the man.
- 2) Secondary pollutants- these pollutants that are produced in the atmosphere due to the chemical reactions or primary pollutants are called the secondary pollutants.

Three types of pollutants viz solid,liquid and gases:-

- 1) Solid pollutants- Household and industrial waste.eg- packaging cases like glass bottles.
- 2) Liquid pollutants-Sewage from house and effluents from industries.
- 3) Gaseous pollutants-Refer to pollutants in gases form such as smoke from vehicles and industrial chimneys even cigarette smoke.

Environmental Pollution and its Classification:-

Natural Pollution »» Hood »» earthquake »» cyclone »» draught »» volcano »» eruptions »» forests fires »» biological decay

Man Made »» Pollution »» Industrial wastes »» toxic gases »» automobiles »» thermal power plants »» industrial units.

Types of pollution:-

Pollution may be classified as

- Air pollution,
- Water pollution,
- Soil pollution,
- Noise pollution, and
- Radioactive pollution.

Causes and Effects of Pollution:-

Causes of Air Pollution-

1. Volcanic activity.
2. Forest fires.

3. Industrial activities.
4. Transportation.

Effects of Air Pollution-

1. Many allergic diseases like bronchitis, bronchial asthma, and other lung disorder in humans are caused by the inhalation of air borne pollen grains, spores of bacteria and fungi.
2. Inhalation of polluted air causes heaviness, sleeplessness, headache and vomiting.
3. Pollutants can also break down the waxy coating on the leaves.
4. The hydrocarbons present in the polluted air cause lung cancer.
5. High concentration of sulphur dioxide in air causes burning and watering of eyes ,contraction of respiratory passage and bronchitis.
6. Air pollution increases the acidity of soils.
7. Air pollutants inhibit the growth of Lichens on trees.

Causes of Water Pollution-

1. Industrial effluents.
2. Solid waste dumping.
3. Nuclear dumping.
4. Percolation of chemical fertilizers and insecticides through soil.
5. Oil spills.
6. Refinery effluents.

Effects of Water Pollution:-

1. 70% of pollution of the oceans has its sources in human activities on land.
2. Rivers carry pollution from far off places to the sea.
3. Various kinds of harmful material are present in the solid wastes and contaminate the ground water.
4. Pollutants such as heavy metals, pesticides, cyanides and many other organic and inorganic compounds are harmful to aquatic organisms.
5. A number of industrial plants such as metallurgical plants, petroleum refineries are responsible for releasing the industrial wastes into the water bodies.
6. Toxic substances polluting water ultimately affect human health.
7. Some heavy metals like lead, mercury and cadmium cause various types of diseases.
8. Some of the industrial effluents can cause changes in the colour, odour and taste of water in the natural water bodies.

Causes of Noise Pollution-

1. Household appliances like mixers, vacuum.
2. Machinery inside factories.
3. Horns of vehicles.
4. Social, religious functions.

Effects of Noise Pollution-

- 1) In a noisy area communication is severely affected.
- 2) Noise can cause temporary or permanent hearing loss.
- 3) Continuous exposure to noise affects the functioning of various systems of the body.
- 4) It may cause hypertension and digestive disorder, peptic ulcers, blood pressure changes, behavioural and emotional changes etc

Causes of Radiation-

- 1) Nuclear wastes from nuclear power plants and other installations.
- 2) Natural sources-They include cosmic rays from outer space, soil, rocks, air water and food which contain one or more radioactive substances.
- 3) Anthropogenic sources-These sources are nuclear plants, nuclear accidents, X-rays, diagnostic kits, test laboratories etc.

Effects of Radiation-

- 1) Radiation causes cancer and other disorder.
- 2) Radiation also affects genes in living organisms.
- 3) It occurs in somatic cells of the body and show effects like miscarriages, cataract of eyes, cancer, etc.

Effects of pollution on human beings and environment:-

- 1) Many allergic diseases like bronchitis, bronchial asthma and other lung disorder in humans are caused by the inhalation of air borne pollen grains, spores of bacteria and fungi.
- 2) The hydrocarbons present in polluted air cause lung cancer.
- 3) Inhalation of polluted air causes heaviness, sleeplessness, headache and vomiting.
- 4) Toxic compounds-pollutants such as heavy metals, pesticides, cyanides and many other organic and inorganic compounds are harmful to aquatic organisms.
- 5) Untreated sewage introduces many diseases causing organisms into water body when this water body as a source of drinking water, serious health problems may result. Some of the diseases caused by drinking water are typhoid, cholera, bacterial dysentery, enteritis

hepatitis.etc.

- 6) Noise can cause temporary or permanent hearing loss.
- 7) Any unwanted sound that causes anonymous disturbance and affect the power of concentration and hearing is termed as noise pollution.
- 8) Radiation can affect living organisms by causing harmful changes in the body cells and also changes at genetic level.
- 9) It occurs in somatic cells of the body and show the effects like miscarriage, cataract of eyes, cancer.

Effect of natural pollution and manmade pollution :-

Recent tsunami, earthquake which had taken place in the high sea of the Indian Ocean caused death toll more than one lakh humans lives besides the death of aquatic animals. Even industrial waste and toxic gases which are hazardous to the environment.

The following activities which polluted and degraded our environment are:-

- Human population explosion.
- Advancement of technology.
- Pollution due to the use of pesticides.
- Biodiversity in nature.
- Toxic time bombs and water pollution.
- Radiation hazards and ecological balance.
- Oil spills and damage aquatic ecosystems.
- Green house effect and global warming.
- Multinationals and environment.
- Poverty
- Unplanned urbanization.
- Lack of environmental awareness.

Pollution Control Devices:-

- Dust collection systems-
 - ✓ Cyclones
 - ✓ Electrostatic precipitators
 - ✓ Baghouses
- Scrubbers-

- ✓ Baffle spray scrubber
- ✓ Cyclonic spray scrubber
- ✓ Ejector venture scrubber
- ✓ Spray tower
- ✓ Mechanically aided scrubber
- ✓ Wet scrubber
- Sewage treatment and Wastewater treatment-
 - ✓ API oil-water separators
 - ✓ Sedimentation(water treatment)
 - ✓ Dissolved Air Flotation(DAF)
 - ✓ Activated sludge biotreaters
 - ✓ Biofilters
 - ✓ Powdered activated carbon treatment.

Environmental Education

The major learning outcomes of environmental education should be:-

- To improve awareness about environmental concerns.
- To develop understanding of ecological principles
- To arouse concern for environmental problems.
- To stimulate commitment for environmental protection.
- To demand action to promote conservation of natural resources.

Role of environmental education in human beings:-

- Environmental education must involve everyone.
- Environmental education must be lifelong.
- Environmental education must be holistic and about connections.
- Environmental education must be practical.
- Environmental education must be in harmony with social and economic goals.

The second international conference on Environmental education (1985), held in New Delhi, formulated few points to help the students and teachers as well.

1. Awareness.
2. Skills.

3. Knowledge.
4. Evaluation ability.
5. Attitude.
6. Participation.

Role of teachers:-

1. To prepare the students to learn environmental education.
2. To prepare the students to develop their outlook towards the curriculum.
3. To develop in the student senses of awareness about the environmental pollution, possible hazards and its causes and remedies.
4. To develop a sense of responsibility towards conservation of environment biodiversity and sustainable developments.
5. To enable the students to understand about various measures available top conserve the environment for sustaining the developments.

Role of teacher regarding to knowledge and understanding:-

- a. Developing environmental awareness among students at all levels and stages.
- b. Developing among students general awareness of environmental degradation and problems.
- c. Making students familiar with the hazards of degradation at the level and community level.

Attitude :-

- a) Transforming building a human philosophy towards environment.
- b) Bringing attitudinal change among the teachers and teachers educators about the environmental and development.

Empowerment:-

- a) Providing guidance to adopt alternative sources for its protection.
- b) Empowering them to take necessary action for its preservation.

Teaching- Learning Strategies:-

Various teaching learning strategies are necessary at school level and university level are as follows:-

1. Exhibitions –

Exhibitions can be arranged to show the project work of the students or to highlight the

environmental problems in order to get suitable remedies.

2. Small Group Projects-

In this strategy, the students have to take up certain projects. Each student is given a work and he is responsible for doing project.

3. Class discussion-

In class discussion students are allowed to refer sources to read extensively to have a thorough idea about the problem and to discuss in the classroom concretely.

4. Field Trips-

Field trips are very much educative and they create great curiosity in students and also bring out their creativity. Field trips play an important role in the formation of right attitude and behaviour.

Conclusion:-

Our analysis of causes of pollution gives us excellent perspective on the fundamental pollution drivers such as globalization, industrialization and population growth. Discussion on effect of environmental pollution explains how much it is dangerous for human health and environment. The nature is us, we are inalienable part of it so we should care for it in the most appropriate manner only then we can possibly solve the problem of the environmental pollution. There are many aspects of the physical, chemical and biological environment which impact on health and health experiences throughout life through our living and working conditions.

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