Human Impact on Eco-Imbalance

Dr.P.Manikandan
Assistant Professor (T)
Dept of Physical Education and Sports
M.S.University
Tirunelveli -627012
and
Mr.S.Manikandan
M.P.Ed-II Yr
Dept. of Physical Education and Sports
M.S.University
Tirunelveli-627012

Introduction

Human Impact on Natural Environment!

Human activities have had a great impact on natural environment. This impact can be seen on climate and other atmospheric phenomena, on vegetation, soils, animals, water as well as on geomorphologic processes.

Climate and Atmosphere:

The increasing human population and the advancement in technology have not only become significant factors in the variations in world climate but are also responsible for the various changes in atmospheric conditions including air pollution.

The human influence on global climate is due to the following mechanisms:

1. Gas emissions
2. CO_2—industrial and agricultural
3. Methane
4. Chlorofluorocarbons (CFCs)
5. Nitrous oxide
6. Krypton 85
7. Water vapour
8. Miscellaneous trace gases
9. Aerosol generation

10. Thermal pollution

11. Albedo change

12. Dust addition to ice caps

13. Deforestation

14. Overgrazing

15. Extension of irrigation

16. Alteration of ocean currents by constricting straits

17. Diversion of fresh waters into oceans

The problem of carbon dioxide (CO2) emission has become a major environmental concern. Since the beginning of the Industrial Revolution humans have been taking stored carbon out of the earth in the form of coal, petroleum and natural gas, and burning it to make carbon dioxide, heat, water vapor and small amounts of sulphur dioxide (SO_2) and other gases, which are responsible for air pollution, greenhouse effect, increase in surface temperature, or in other words, global warming.

By 2050, it is possible that the increase in global surface temperatures ranges between 1.4 and 2.2 degree Celsius. All other aspects of atmospheric pollution will be discussed under the heading, 'Air Pollution'.

The impact of human activities on the atmosphere is more because the atmosphere acts as a major channel for the transfer of pollutants from one place to another. It is in this way that harmful substances are transferred long distances from their sources of emission. Another example of the possible widespread and ramifying ecological consequences of atmospheric pollution is provided by acid rain.

In recent years, the greatest attention has been paid to the role of CFCs, the production of which has been rising in last few decades.These gases may diffuse upwards into the stratosphere where solar radiation causes them to become dissociated to yield chlorine atoms which react with and destroy the ozone present there. The Antarctic ozone hole has been identified through satellite monitoring. In fact, air pollution and its variability both in space and time is more due to human action.

Animals:

The range of impact that humans have had on animals, though large, can be grouped conveniently into five main categories: domestication, dispersal, extinction, expansion and contraction. The extinction of animals by human predators has been extensive over the past

20,000 years, and in spite of recent interest in conservation, it continues at a high rate.The extreme effect of human interference with animals is extinction. The problem of extinction of several animal species has become a world-wide ecological problem.

This decline is partly due to intentional killings for subsistence and commercial purposes, but much wildlife decline occurs due to pollution and also due to change in ecosystem and natural habitat. For example, the use of DDT is one of the causes for the extinction of several types of insects, birds and small animals. The polluted water containing heavy metals and methyl mercury is also harmful. Oil pollution is an increasingly serious problem for marine and coastal fauna and flora. Sea birds are especially vulnerable since oil clogs their feathers. Other industrial pollutants have a clear impact on aquatic systems. Pollution is a serious problem for coral reefs too.

Soils:

Soil is the most vulnerable of human resources and is one on which humans have had a very major impact, because they live close to and depend on it. Impact on soil can occur with great rapidity in response to land use change by new technologies. The major changes brought about by humans are chemical, structural and hydrological, while soil erosion is perhaps the most important.

Salinity is a natural characteristic in some semi-arid and arid soils. But humans have increased the extent and degree of salinity in different ways.

The extension of irrigation and different techniques, used for water abstraction, can lead to a build-up of salt levels in the soil through the mechanism of raising groundwater level. The construction of large dams and barrages to control water flow and to give a head of water creates large reservoirs from which further evaporation can take place. The seepage of water is also responsible for upward movement of groundwater.

Water:

Water is the source of life and, human beings use it for various purposes. The ancient civilizations have developed in river valleys. This is also true of medieval townships and other developments, and all modern developments are related directly or indirectly to water. The main concern is that by using water, humans have influenced both its quantity and quality.

Earlier, the influence of human activity on water resources was limited but now this has become a major problem of environmental degradation throughout the world. However, there are many ways in which humans influence water, for example, by direct channel manipulation, modification of watershed characteristics, urbanisation and pollution.The construction of dams

and reservoirs is widespread throughout the world for irrigation, to generate power or to provide a reliable source of water. More than 700 dams have been built worldwide and their number is increasing year after year.

Deforestation:

The herculean feats of economic gains and development have been at the cost of deforestation. Deforestation is one of the outcomes of various developmental activities having the character of extensional development and it is true that deforestation is a havoc wreaked by thoughtless destructive activities of development.

Forest clearings were made not only for village settlements but also for cultivation and pastures. As the population increase, more forests were cleared for various uses. Apart from this, the commercial exploitation of forests is the main cause of deforestation. There was a time when 70 per cent of the land area was covered with forests and now the total forest cover has shrunk to 16 per cent only.

Soil:

Pesticides are toxic, hence it is assumed that their presence in soil will change or alter fundamental soil processes, such as: (a) organic matter decomposition, (b) nitrogen transformation, (c) sulphur transformation, (d) phosphate availability, (e) trace element availability, and (f) soil enzyme activity, which influence soil fertility and productivity.

Water:

The presence of toxic chemicals in water also has significance as they are picked up by unicellular aquatic organisms like plankton and get accumulated in the body by a phenomenon called bio-concentration.

Air:

The amount of pesticides released into the atmosphere, if larger than really required, pollutes the air. Presently, in India, 123 pesticides are permitted and are being used over a total area of about 142 million hectares. Among all pesticides, insecticides constitute about 80 per cent, followed by fungicides at 10 per cent, herbicides at 7 per cent, and others at 3 per cent. Pesticides like DDT, DDE, TDE, deriding, endpin, heptachlor-peroxide and aldrin are harmful.

Many developed countries have prohibited the use of those pesticides which have harmful effects on living organisms. Pesticides can even enter the body through the skin, lungs (inhaled) or the digestive tract. Nausea and vomiting, abdominal cramps, diarrheal and involuntary defecation are the usual symptoms following gastro-intestinal poisoning.

Environmental Degradation and Technological Development:

With the help of scientific and technological developments man has achieved new dimensions in his own development and has improved his quality of life by adding several amenities and facilities. The industrial development is proceeding at a very fast rate; similarly, revolution in the transportation sector has also occurred not only in developed countries but also in developing countries.

In the fields of agriculture, resource utilisation, power consumption, and engineering and in other scientific fields man has achieved success of high level. But, the current strong feeling is that all these developments have been responsible for the degradation of the environment and there is an urgent need to evolve an environ- mental-friendly technology.

It is said that "technology produces the crisis and technology can solve it". Some of the problems produced by technological and scientific developments are as follows:

(i) Degradation of environment and expansion of pollution through industrialisation.

(ii) Unorganised mining.

(iii) Rapid deforestation.

(iv) Pollution due to transportation.

(v) Danger of leakage of radio-activity from atomic reactors.

(vi) Disturbances in eco-sensitive areas like ozone layer, tropical forests, Antarctica, etc.

(vii) Population growth, urbanisation, decline in death rate and other demographic changes are responsible for more and more exploitation of resources.

(viii) Extinction of several species of wildlife, birds and plants.

(ix) Too much stress and strain has created several health problems.

In brief, the quality of environment is deteriorating day by day. It should be maintained through environment planning, people's participation, environmental status evaluation, and environmental legislation and administration.

Conclusion:

The above mentioned impacts of human activity on environment are just an introduction to the thinking that with the development in technology, the numbers of ways in which humans are affecting the environment are proliferating. The complexity, frequency and magnitude of impacts are increasing, partly because of rising population and party because of a general increase in per capita consumption.

If present trends continue, the world in 2000 will be more crowded, more polluted, less stable ecologically, and more vulnerable to disruption than the world we live in now.

Works Cited

Nogués-Bravo, D., et al. "Scale effects and human impact on the elevational species richness gradients." *Nature* 453.7192 (2008): 216.

Wackernagel, Mathis, and William Rees. *Our ecological footprint: reducing human impact on the earth*. Vol. 9. New Society Publishers, 1998.

Goudie, Andrew. "Human impact: man's role in environmental change." (1982).

Kirkpatrick, James Barrie. *A continent transformed: human impact on the natural vegetation of Australia*. Oxford University Press, 1999.

Wackernagel, Mathis, et al. "Tracking the ecological overshoot of the human economy." *Proceedings of the national Academy of Sciences* 99.14 (2002): 9266-9271.

****