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ENVIRONMENTAL STRESS

Our environment plays a vital role in determining our well-being. We live in an environment and the quality of our life depends on the quality of the surrounding environment. Today various types of pollution (e.g., water, air) are creating stress for the people. As you know a large number of diseases come from the environment in which we live. In this lesson we will study about the factors in our environment which produce stress, their psychological impact and analyze some of the ways of overcoming them.



OBJECTIVES

After studying this lesson, you will be able to:

- explain the various models of human-environment interaction;
- state the various aspects of environmental stress;
- describe how environmental stress can be managed; and
- explain the concepts of pro-environmental behaviour and sustainable development.

23.1 ENVIRONMENTAL STRESS

You have read about stress and its various effects in lesson 21. To recapitulate it may be noted that stress is any physical or emotional state that causes bodily or mental tension. In the same way environmental stress can be defined as an undesirable transaction between the person and the environment. The demands made by environmental factors on us constitute the sources of environmental stress. To understand environmental stress better, let us learn about some issues linked to the human-environment relationship.

As indicated earlier considerable part of human behaviour is influenced by our environment. Environment has been used to include the physical world and socio-cultural surrounding in which we live and interact with others. The field of



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environmental psychology deals with the diverse effects of environment on behaviour. We all wonder at times that in the relationship between human and environment who is superior? We all have read in the newspapers about the remarkable achievement of human beings over nature like going to the moon, cloning etc. But does this mean that human beings are free to play with nature? What answer can one give to the natural calamities which befall human lives?

To answer these questions, let us try to understand the different ways in which the human-environment relationship can be understood. Let us understand these views in some detail.

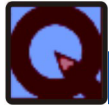
a) Humans Subjugated to Nature: During the early part of history human beings looked at the environment from a different perspective. They believed that the nature rules human beings. The various components of nature were considered supernatural and objects of worship. However, this view is still held in some cultures. The sun, moon, stars, animals, birds, trees etc. all are worshipped and also considered to be objects to be afraid of. This view did not find place in the modern scientific view in which reality in the physical form became important and human capabilities were highly valued. This led to another model which favoured human beings i.e. power or control over nature.

b) Humans Control over Nature: With the advent of science and technology, nature no longer remained a thing to be afraid of. Experiments were conducted by scientists in the various facets of life. We all have heard about kidney transplant, open heart surgery etc. In the same way we all see that nowadays the vegetables grown at a specific time of the year are now available throughout the year. A field called genetic engineering is bringing changes in the pattern of crop production and medicines. Human life has been elevated scientifically but again it was felt that some questions remained unanswered. Devastating earthquakes and global warming (rise in the temperature) which have brought climatic changes and depletion of the ozone layer—all are now matters of great concern. Nuclear power has become a constant threat to the world. These problems lead us to think about environment differently in which a balance between man and environment is warranted.

c) Symbiotic Relationship between Human and Nature: We all read slogans like 'conserve oil', 'plant trees' and 'save water' but have you ever thought why it is said so? Do you know that many of the changes in our environment are happening due to various acts of human beings? Human beings and nature have always shared an interdependent relationship which means that no one is sufficient in itself. Human beings derive a lot from nature in various forms and it also becomes a necessity that a sense of duty towards nature is generated. People blindly exploit various natural resources without thinking about their impact on others in present time and future. Many natural resources (e.g. oil, coal) are unreplenishable and therefore should not be wasted.

The imbalance created due to blind exploitation of nature is also resulting in various forms of pollution and threats to life. You will read more about the various types of pollution and their impact in a later section of this lesson. The quality of air, water and eatables all are influenced by human intervention.

The symbiotic relationship between human beings and nature is a balanced view which tells us that we must recognize our limitations and do not blindly harm environment by our activities. It recognizes the natural interdependence of the two.



INTEXT QUESTIONS 23.1

1. What is environment?

2. What is the symbiotic relationship between human being and nature?

23.2 POLLUTION ISSUES

Till now we studied about the various views about human-environment relationship. We have noted that the environment has both constructive as well as destructive effects on human life. In this section we will study about the various aspects of environmental stress which are also known as stressors. We can categorize the various types of pollution as air pollution, water pollution and noise pollution.

First of all let us understand pollution. Pollution is an undesirable change in the physical, chemical or biological characteristics of air, land and water that may harmfully affect life. It is an unfavourable alteration of the environment largely as a result of human activities. It is caused by various pollutants which are substances foreign to the medium such as air or water in which they are present. It causes problems to the animal and human world. The various types of pollutions are as follows:

1. Air Pollution
2. Water Pollution
3. Noise Pollution
4. Crowding
5. Green House Effect

1. Air Pollution

Nobody can ever forget Bhopal Gas tragedy when thousands of innocent people died due to inhaling of methyl isocyanate gas which got mixed in the air - the essential component of life. Till today its ill effects are felt as new born babies and adults suffer from asthma, cough and defective eyesight.





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Air Pollution and Health

The health hazards of air pollution are well known. It is believed that 50-90% of cancer cases are due to air pollution. Other kinds of ill health include epilepsy, memory disturbances, visual and auditory impairments and asthma spasms.

If you ever visit big cities like Delhi, Kanpur, Mumbai, Kolkata or happen to stay there - you will experience that your eyes, nose and throat are irritated. A burning sensation can be felt in the eyes. You can feel the poor quality of air once you travel from these cities to any countryside area. Air pollution is defined as an imbalance in the quality of air so as to cause adverse effects on the living organisms. It is caused by the excessive presence of certain gases and suspended material particulates (SPM). The air is the carrier of oxygen for all life forms. Gases like carbon di-oxide (CO_2), Nitrous Oxide (NO_2), Sulphurdioxide (SO_2) and suspended particulates including lead are the major pollutants. These not only cause irritation but also result in diseases like respiratory problems, cardio-vascular problems, hypertension, asthma, eye-related and neurological problems and result in early deaths too. You must remember that human behaviour is linked to air pollution both as a causal factor and also as an effect.

The major sources of air pollution are increase in power consumption, industrialization, vehicular traffic and burning of refuse, garbage, smoking and cutting trees for building construction.

2. Water Pollution

Pollution of water refers to addition of excess undesirable substance to water that makes it harmful to human, animal and aquatic life.

We all know about Hepatitis A and Hepatitis B. Do you know that these are water born diseases? It has been found that all surface water and a lot of ground water in India is unfit for direct consumption by human beings. The poor quality of water causes various diseases like diarrhoea, intestinal worms and hepatitis. It has also been found that ten percent of all diseases and twenty percent of the communicable diseases in India are water-related.

You must be wondering that how does the water quality gets affected. It is largely due to following factors : (i) domestic and human waste water, (ii) industrial waste water, and (iii) agricultural run off.

The domestic and human waste water is often times used without proper treatment as irrigation water. Some vegetables which are eaten raw are also washed in this dirty water. This water and the industrial waste water are dumped into the rivers which contaminate the river water too. The chemically treated water of the industries pollutes the river water in such a way that it becomes polluted beyond treatment.



This further affects the quality of our ground and surface water. The decreasing life of our rivers can be seen in the case of Yamuna in Delhi and Ganga in Kanpur.

Water is a basic necessity for life. If water pollution is not checked, then that day is not very far when we will have to buy water even for taking bath and cooking.

3. Noise Pollution

Have you ever listened to music which has been so loud that you have to raise your voice to talk? Have you ever stood besides a railway track and talk in your normal voice as the express train passes by at a high speed? Have you ever tried to work while workmen dug up the road just outside your room? Do all these things allow you to function in your normal self? Your answer will be definitely negative. Why? It is because high sound causes noise pollution.

How will you define noise pollution? Noise pollution can be defined as the intensity, loudness, timbre or pitch of sound which causes us physical discomfort or it may be unwanted because of the situation. The intensity is an important dimension yet the degree of annoyance is not necessarily related to intensity only. Factors like familiarity and attitude often influence the degree of annoyance. People become habituated to noise and experience lesser degree of discomfort.

Damage caused by noise level higher than recommended level lead to a number of adverse effects on health. It can range from impaired eardrums, permanent hearing loss, cardiac and cardiovascular changes lack of concentration, deterioration in motor and psychomotor functions etc. Workers habitually exposed to noise complain of anxiety and emotional stress.

There are various ill effects of noise pollution. Let us discuss some of them:

- (i) **Health hazards:** It has been observed that traffic noise is related to certain symptoms such as nervousness, sleeplessness, undue irritability, depression and asthma. Some studies have also revealed that noise pollution triggers aggressive behaviour and reduces altruism and helping behaviour. It has also been observed that noise disrupts the harmony of interpersonal relations.
- (ii) **Problems in Communication :** One of the easily observed effects of high level of noise is the disruption of communication. Another effect of noise appears to be reduction in performance and low job satisfaction. This has also been inferred that noisy classroom reduces students' clarity regarding tasks, attention, motivation and reduces academic performance.
- (iii) **Accidents :** Apart from various other things, noise has been identified as one of the major factors causing accident.



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4. Crowding

We all have frequent experiences of crowding. We often encounter crowding in a city bus, at railway reservation counter, in market, in village fair etc. Sometimes crowding creates a lot of anger and distress particularly in situations like over crowded bus and long queue on reservation counters. On the other hand it creates a great deal of enjoyment and pleasant experiences in situations like marriage, social functions at home, school, party etc. More recent researches have suggested that crowding is related to crime and negative emotions.

As a form of stress, crowding involves subjective discomfort and physiological arousal. The feeling of discomfort, perception of loss of control over social interaction, encroachment on privacy and negative perception of space are considered as characteristic features of crowding. This feeling is a state of stress which often leads to negative behavioural consequences.

Before discussing some of the effects of crowding, let us understand the meaning of crowding. Psychologists distinguish between density and crowding. Density is the number of persons per square kilometer. This is an objective measure of the number of persons present at a given place. Let us illustrate this with the help of an example. Suppose there are two situations one in an overcrowded bus and another at a marriage party. Though the density may remain the same in both situations the behaviour and experience would be different. Therefore, behaviour and experience of crowding depend upon our relationship with the people involved, the duration of the experience, the physical context and the meaning assigned to it. We are likely to feel less crowded in a group of friends than in a group of strangers.

Let us discuss some of the effects of crowding in detail.

(i) Crime

A link between crime and crowding has been noted. The most known crimes such as pick-pocketing and snatching tend to occur in crowded settings. We are all familiar with increase in this sort of crime during busy rush hour on local trains and buses, peak hours in market places etc.

(ii) Crowding in Corrective Institutions (Prisons) and Psychiatric Institutions

Over crowding in prisons has become a major problem in India as well as other parts of the world. In recent past various cases of riots/clashes among inmates and stress among prison officers have been reported in the different parts of India. Both these cases seem to be related to over crowding because violent criminals require greater personal space than non-violent individuals.

Similarly individuals with mental disorders particularly patients suffering from schizophrenia and neurosis etc. exhibit higher sensitivity to crowding. This leads to assaults on other patients or staff.

(iii) Effects on emotion and behaviour

It has been observed that crowding leads to increased physiological arousal and stress. Because of this it is not surprising to find increased incidence of high blood

pressure and faster heart rate in crowded situations and increased levels of physical illness. So anger and aggression seem to be the most likely emotional responses. Some times crowding also leads to apathy, social withdrawal and learned helplessness.

The only thing which should be kept in mind is that various effects of crowding on human behaviour and experience co-exist along with other features of environment.

5. Green House Effect

Human beings, for quite some time now, have been indulging in anti-environmental behaviours on a large scale. Because of this abuse of the environment, like producing waste, burning of fossil fuel (petrol, diesel etc.) deforestation, burning of coal, forest fires, the use of chlorofluorocarbons (CFC) for refrigeration, etc. global warming is taking place. The gradual increase in temperature of earth's atmosphere and oceans is being brought about partly as a result of various human activities. It has far reaching consequences on the ecology and environment. These include increase in storms and other weather extremes, melting of ice caps at the North and South Poles that has resulted in raising the sea levels. These effects have been observed in several parts of the world. The oceans are rising about one inch every five years. It has been observed that three of the islands of the Republic of Maldives are now under water. You must have learned about increase in the occurrences of Tsunami.

The change in climate (global warming) is closely related to 'greenhouse effect'. The effect is called 'green house effect' because in cold regions where sunlight is needed for developing plants, a glass house is made which they call - Greenhouse. The Greenhouse has a glass roof that lets in warming sunlight but prevents escape of warm air. In the same manner the four gases released into the atmosphere (carbon dioxide, methane, and CFC) trap the sun's heat, that turns the earth into a vast "green house" i.e. not letting the heat to be released. This increases the temperature of the atmosphere. The increase in the levels of the three gases began about the middle of the 18th century. If this trend continues, it is estimated that it will result in an average warming of the earth's surface air temperature by about 3.5 degrees Fahrenheit by the year 2100. Even an average increase of 1 or 2 degrees can change regional climates and disrupt agriculture world wide. This trend will cause extensive melting of polar ice caps, resulting in raised ocean levels and flooding of huge low lying coastal areas in many countries. The global warming, can be reversed, if human behaviour that brought about this problem is changed. For example, the carbon dioxide emissions are reduced, planting more trees and ban on the use of CFC for refrigeration. The ban on CFC use by fifty nations has brought some change in the ozone layer. However, the extent of damage to the ozone layer has been so much that it should return to its normal thickness in fifty to one hundred years.

23.3 SUSTAINABLE DEVELOPMENT

According to World Commission on Environment and Development which is also popularly known as Brundtlandt Commission, sustainable development is defined as "development which meets the needs of the present without compromising the





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ability of future generations to meet their own needs”. Sustainable development means preservation of the stocks of resources including environmental resources and exhaustible resources. The major cause of worry about the sustainability of development is supposed to be the wasteful consumption style. The present production technology is making large use of the non-renewable natural resources such as coal, gas, petroleum which are also called fossil fuels. These sources of energy are the result of natural storage which is of hundred or more years old. Even the renewable natural resources like forest animals, water etc. are being used by the human being in such a way that very soon there will be shortage of these resources. The nature has assimilating capacity but if the pollution levels remain very high then nature may not be able to assimilate it. This may result in lack of clean water and clean air. If these non-renewable natural resources deplete rapidly then our future generations may not find anything for their use. Therefore, a little restraint needs to be practiced. The environment is not restricted to natural boundaries which means that if people in any part of the world follow unhealthy practices it may result in harming the entire humanity. Hence sustainable development is a path of development in which options of future generations are not compromised by the acts of present generation.

How can you contribute for a better environment?

1. Conserve water by avoiding unnecessary use of water.
2. Use public transport.
3. Ask for paper bags or cotton bags for carrying your things.
4. Use as less electricity as you can.
5. If you have a garden, consider composting the vegetable wastes.
6. Try to reduce the amount of material you use and buy. Reuse containers and any other items that you can.
7. Try to obtain recycled paper.
8. Plant as many trees as you can.
9. Buy appliances that are energy efficient.
10. Save electricity by turning off unnecessary lights.
11. In your home, avoid using substances that could damage surface and ground water such as use phosphate free detergents and do not dispose of unwanted house hold chemicals in the drain.

It needs to be understood that because each one of us contributes to environmental degradation, it becomes mandatory to make efforts for environmental conservation and pollution control.

Environmental Stress

One day the great Greek philosopher Plato was walking through a street of Athens. One of his students had a shop in the same street. On seeing the teacher passing by he ran after him, saluted, and invited him to visit his shop.

Plato walked into the student's shop. The student was delighted. He said to the teacher. "Sir, Please take anything you want."

Plato looked around and saw the attractive items and said, "*I don't see anything that I need here.*"

Plato's reply can help us in distinguishing between 'want' and 'need'

- A want is a wishful thing, which you desire to have. There is no end to our desires and wants.
- A need is something without which you cannot survive, e.g. for our physical survival we need air, food, water, clothes, house and medicine. Then we have our professional needs. For instance, a writer needs a pen. A carpenter needs his tools. Fortunately our needs are few but wants are unlimited.
- When we want to buy anything we should question ourselves: "Do I want this? Or do I need this?"
- By buying things we really do not need, we not only waste money, but also contribute to the exploitation of natural resources. Such things end as rubbish.
- Simple living means to live physically with less wants but with inward richness such as joy, contentment, beauty and wisdom.



INTEXT QUESTIONS 23.2

1. Define pollution.

2. Is there any relationship between crowding, emotion and behaviour? Describe any one emotional response to crowding.



WHAT YOU HAVE LEARNT

- The environment has both nourishing as well as destructive effects on human life.

MODULE - VI

Work Life and Environmental Concerns



Notes

**Notes**

- We can categorize various types of stresses such as air pollution, water pollution, noise pollution, crowding, global warming and green house effects.
- Pollution is an undesirable change in the physical, chemical or biological characteristics of air, land and water that may harmfully affect life.
- Pollution is caused by various pollutants which are substances foreign to the medium like air or water thus causing problem to the animal and human world. The various pollutions are air Pollution, water pollution, noise pollution, crowding and Green House Effect.
- Water pollution is defined as addition of excess undesirable substance to water that makes it harmful to human, animal and aquatic life.
- Noise pollution can be defined as the intensity, loudness, timbre or pitch of sound which causes us physical discomfort or it may be unwanted because of the situation.
- Sustainable development means preservation of the stocks of resources including environmental resources and exhaustible resources. The major cause of worry about sustainability of development is supposed to be the wasteful consumption style.

**TERMINAL QUESTIONS**

1. Explain any one model of the human-environment relationship.
2. What is environmental stress? Explain.
3. Describe air pollution and its consequences for health.

**ANSWER TO INTEXT QUESTIONS****23.1**

1. Environment includes the physical world and the social and cultural set-up in which we live and interact.
2. The symbiotic relationship considers that human and environment are interdependent on each other.

23.2

1. Pollution is an undesirable change in the physical, chemical or biological characteristics of air, land and water that may harmfully affect life.

Environmental Stress

2. Yes, Anger/Aggression/Social withdrawal (any one of the three)

Hints for Terminal Questions

1. Refer to section 23.1
2. Refer to section 23.1
3. Refer to section 23.2

MODULE - VI

Work Life and Environmental Concerns



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