

## MODULE - 1

Environment through  
Ages



Notes

3

# DEGRADATION OF NATURAL ENVIRONMENT

When humans evolved more than two millions years ago, the natural resources were over abundant as compared to human needs. As human population increased, more and more food and resources for shelter were required and these were drawn at an increasing rate from the environment. Even today, natural resources are being exploited by humans to meet their needs. In this lesson you shall learn how human activities degrade and deplete the natural resources of the environment.



## OBJECTIVES

After completing this lesson, you will be able to:

- *recall the concept of environmental degradation and factors that cause it;*
- *explain how exploitation of natural resources leads to environmental degradation;*
- *explain the relationship between population growth and environmental degradation;*
- *explain the relationship between urbanization and deterioration in environment;*
- *explain the causes and effects of deforestation;*
- *draw a relationship between excessive mining and environmental degradation;*
- *explain the meaning of fossil fuels and the impact of their use on the environment;*
- *discuss how modernization of agriculture has adversely affected the environment;*
- *discuss the impact of industrialization on abiotic (air, water and soil) and biotic resources (plants and animals) of the environment;*
- *list local, regional and global backlashes caused by environmental degradation;*
- *describe the impact of environmental degradation on life.*



### 3.1 CONCEPT OF ENVIRONMENTAL DEGRADATION

Increasing use of natural resources by rapidly increasing human population has resulted in overexploitation of natural resources. The consequences of such exploitation are clearly seen in soil erosion, loss of biodiversity and pollution of land, air and water bodies. The degradation of the environment from overexploitation has reached a level which is threatening human well-being and survival.

### 3.2 RECKLESS EXPLOITATION OF NATURAL RESOURCES LEADS TO ENVIRONMENTAL DEGRADATION

In nature, there exists an ecological balance. The activities of various organisms are balanced. The interaction between abiotic and biotic components are so fine tuned that there exists an equilibrium in nature.

As years passed by, human activities interfered with this equilibrium. Uncontrolled human activities caused damage to the environment.

Some of the human activities that have led to environmental degradation are mentioned below-

1. Forests are natural resources but they have been cut down for use by humans for converting them into the cultivable fields, for building houses and for taking away logs for making shelters and furniture or fuel. The rate at which trees are cut far exceeds the rate at which trees grow, so forests are getting denuded.
2. Trees lose lot of water through transpiration. This helps in forming rain clouds. Cutting of trees and clearing of forest reduced rainfall in the area. Also removal of plants and trees leads to soil erosion.
3. Forests are natural habitats of wild life. Extinction of wild life species is on the rise because their natural habitats are being destroyed due to deforestation.
4. Non-renewable energy resources such as coal, natural gas and petroleum are being used up speedily, leading to their depletion.

These are examples show the loss of natural resources due to the overuse by humans.

#### On the other hand,

1. Excessive burning of coal, wood, kerosene, petrol etc. release toxic gases such as  $\text{SO}_2$  (sulphur dioxide),  $\text{NO}_x$  (oxide of nitrogen),  $\text{CO}$  (carbon monoxide) and hydrocarbons in the air. These gases are also emitted by industries, power plants, automobiles and aircrafts. The toxic gases pollute air which adversely effects human health and plants.
2. Acid water from mines, toxic waste of industries, chemical fertilizers and pesticides from agricultural fields have polluted rivers and other water bodies.

## MODULE - 1

Environment through  
Ages



Notes

3. The problem of soil pollution is increasing day by day in villages, cities and industrial areas due to faulty disposal of solid and liquid wastes generated from households and industries.

Thus humans have spoilt the environment by (i) depleting natural resources to a critical level and (ii) causing pollution to natural water bodies and land areas.

### 3.3 IMPACT OF POPULATION GROWTH ON ENVIRONMENT

The enormous increase in human population is making the future of humans insecure. It is estimated that 5 million people lived in the world at the time when agriculture began about 12000 years ago. The population of our country alone is now well over one billion.

#### 3.3.1 Factors leading to rise in population

Many factors have contributed to the enormous rise in human population. These are listed below:

1. Improved agricultural practices have helped in increasing food production, hence food became available.
2. Progress in medicine prevented deaths due to injury and epidemic diseases.
3. Average longevity of humans has increased since heart, lung and kidney disorders as well as other diseases can now be diagnosed and treated through modern medical technology.

#### 3.3.2 Impact of population growth on environment

With growing population, requirement for space, shelter, and commodities have exerted enormous pressure on the environment. To provide for these, land use has changed dramatically. It has already been seen that forests have been cleared for cultivation of grain and fruit crops.

##### 1. Clearing land for cultivation to grow more food

Forests and natural grasslands have been converted to farmlands. Wetlands have been drained and arid lands have been irrigated. These changes have been made to grow more food and more raw materials. But in doing so, the natural resources have been depleted and the landscapes have undergone drastic changes. For example, forests have been cleared over large areas for cultivation of agriculture crops. Many mangrove forests known to reduce erosion and stabilize shorelines have been cleared for growing food crops to meet the needs of the growing population.

##### 2. Water scarcity

Water received as rainfall, flows into rivers, lakes and other water bodies. Some of it seeps into the ground and reaches the ground water. At certain depth of the soil, all the pore spaces between soil particles are saturated with water. This depth is called **Water**



**Table.** The water table may remain stable if the drawn from the ground water is replenished by the seepage of the rain water. But if water withdrawal exceeds beyond the rate of replenishment of the ground water table keep on receding and resulting in drying out of wells. In many areas excessive withdrawal has depleted ground water resources causing acute water scarcity.

### 3. Need for human settlements

Apart from excessive land use changes for growing food, large population means greater requirement for shelter. To make houses for so many, stones and other building materials have to be quarried more rocks have to be blown off and more water to be used.

### 4. Need for transport

Elaborate network of transport is required to fulfill the growing need of teeming millions. Various modes of transports have been developed which consume growing quantities of fossil fuels such as coal, gas and petroleum, polluting the atmosphere.

### 5. Need for various commodities

Articles of everyday use such as plastic vessels, mugs, buckets etc., agricultural implements, machinery, chemicals, cosmetics etc are manufactured in factories. The raw materials and fossil fuels and water needed to run industries for manufacturing these products lead to their depletion. Rapid industrialization has also led to pollution from dumping of industrial effluents into rivers and other water bodies. Rapid industrialization has caused much damage to the environment. Mining activities have depleted stock of mineral resources particularly fossil fuels.

Present day industrial civilization is becoming a burden on nature and it is time for us to learn to live in harmony with nature.

### 6. Slum development

Over populated areas result in congested roads and slum formation which lack basic amenities like drinking water, drainage, waste disposal, lack of hygienic conditions and filthy environment create potential conditions for public health problems including spread of epidemic diseases. Discharge of untreated effluents and throwing of waste into water bodies have polluted most of the lakes and rivers.

### 7. Pollution resulting from overpopulation

Holy rivers Ganga, Yamuna and other are suffering from pollution due to discharge of effluents from industries, human settlements, bathing, washing of clothes and throwing of garbage into the river.



## INTEXT QUESTIONS 3.1

1. State any two types of environmental degradation caused by humans.

---



2. Give one reason for increase in human population.

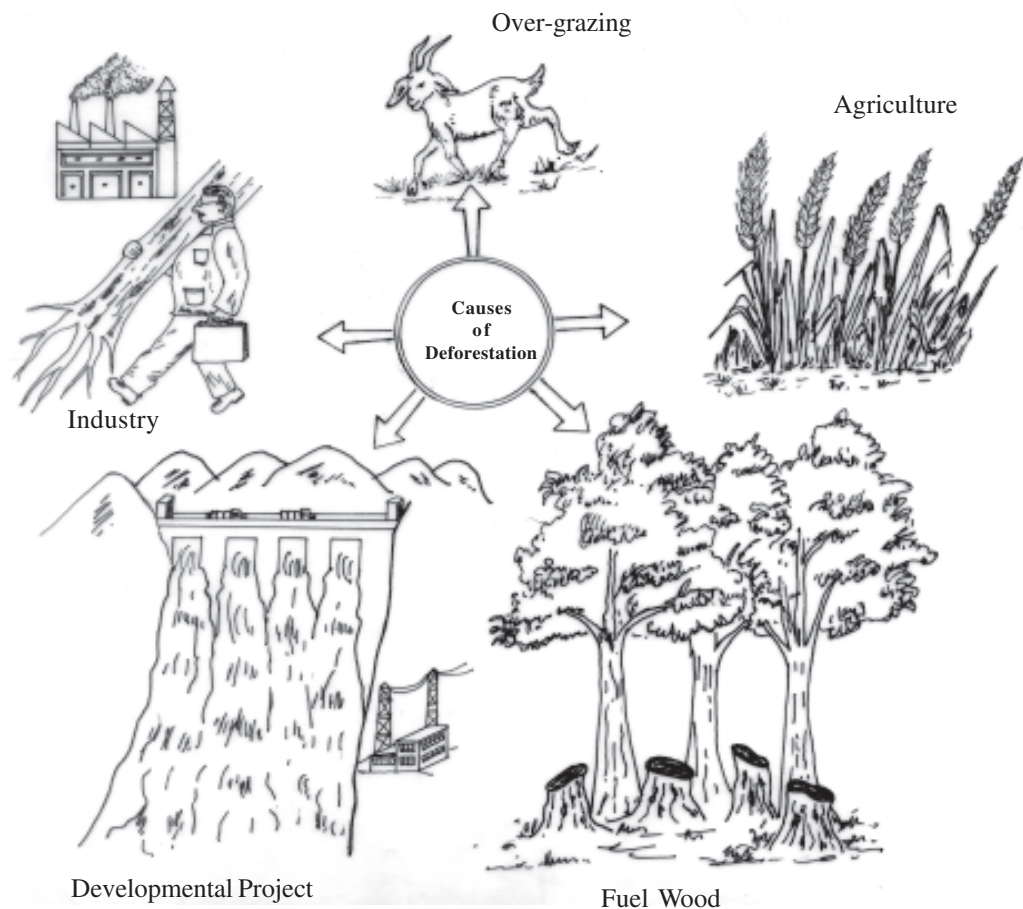
\_\_\_\_\_

3. Why rapid growth of world population is a cause for alarm?

\_\_\_\_\_

**3.4 DEFORESTATION AND ITS CONSEQUENCES**

Forests are found all over the world except the polar regions. Originally forests covered one third of the land area. You have already learnt that since the beginning of human evolution, they have depended on the forest resources. Forests are nature’s major processors of solar energy. They provide habitat for diverse kinds of organisms including large wild animals. Primitive humans too, lived in forest and were completely dependent on forests for survival till they took to farming; Cutting of trees in forests is called **deforestation**. Deforestation has taken place for various purposes at an alarming rate in different parts of the world resulting in severe loss of wild plants and animals. (Fig. 3.1)



*Fig. 3.1: Causes of deforestation*



Forests have been cleared for the various reasons-

### 1. Developmental activities

As humans began leading a settled life, crop fields, building, roads, industries, schools, hospitals, railway and irrigation canals etc. became necessary developmental activities. Forests were cleared to meet the need for land needs for the above developmental activities.

### 2. For timber and wood

Wood is used in buildings construction, making furniture and other articles for human use. Trees that yield wood grow in forests and were cut down for timber. Use of firewood for cooking and heating etc. also contribute to deforestation

### 3. For pastures

Forests are cleared to grow grasses and converted into grassland for grazing by cattle.

### 4. Shifting cultivation

Shifting cultivation is a system of crop cultivation involving cleaning of forest and burning the fallen trees to clear the land for raising crops. Crops are grown on the cleared area for few years and abandoned after few years as the land loses its fertility. Thereafter a new forest areas is cleared for cultivation and the same cycles is repeated

#### 3.4.1 Consequences of deforestation

##### • Soil erosion

Trees intercepts rainfall and cutting of trees and removal of plants leads soil erosion. Plants roots hold the soil in place. With loss of protecting cover of plants, top soil, that is rich in organic matter, is washed away and the soil loses its fertility..

##### • Landslides

Removal of trees from forests leads to soil erosion. Ultimately cause landslides in hilly areas. This is because roots of trees hold the soil in position;

##### • Silting

The loss of trees from forests also causes silting of rivers and lakes as loose soil gets washed with rainwater and reaches water bodies;

##### • Loss of wild habitat

Wild animals live in forests. Cutting forests means loss of their habitat which in turn renders them endangered or even extinct.

**Notes****• Deforestation**

Deforestation results in change of climate since trees make the surroundings humid. Loss of trees leads to loss of humidity. Also transpiration from plants makes rain clouds and so rainfall is reduced due to deforestation.

**• Loss of CO<sub>2</sub> sink**

Pollutants released by industries take CO<sub>2</sub> are taken up by trees. When forests are denuded. This CO<sub>2</sub> sink is lost and CO<sub>2</sub> collects in the environment.

**• Pollution**

When trees are cut to use for making furniture or paper, the sawmills and paper mills pollute water in which they dump the waste.

**• Loss of medicinal and other useful plants**

Unique medicinal plants grow in certain forests. They are lost due to deforestation. Aromatic herbs, rubber trees and other useful plants are also lost due to deforestation

Thus forest destruction leads to large scale environmental degradation

**INTEXT QUESTIONS 3.2**

1. What is deforestation?

---

2. Give two reasons why trees are cut down by humans.

---

3. State any two consequences of deforestation.

---

4. Why do wild animals become endangered due to deforestation?

---

5. Why does deforestation cause soil erosion?

---

**3.5 ENVIRONMENTAL DEGRADATION FROM MINING****• Loss of vegetation**

Vegetation and soil are removed to get access to mineral deposits. The flora and fauna present in the area is lost.





### • Depletion of minerals

You have already learnt in the last lesson that earth is full of metals and mineral resources. They are very important non-renewable natural resource. India is very rich mineral resources. In last two hundred years advancement in mining technology has progressively intensified mining of mineral resources. Large amount of lead, aluminum, copper and iron ores have been used up. It is believed that in the next 20 years silver, tin, zinc and mercury will be depleted to an alarming level if their exploitation continues at the present rate.

### • Dumping of debris

Extraction of minerals from the earth also produces significant amounts of over-burden or debris. Often it is much more as compared to the quantity of mineral obtained. The dug out loose waste material is dumped on the adjacent land. Dumping of mining waste not only occupies large land area but the waste dumps also become a source of soil erosion.

### • Land subsidence

Excessive mining specially underground mining may lead to land subsidence and may also cause landslides. The landscape too is spoilt.

Unless care is taken, not only minerals will be alarmingly depleted but also a large land area, which could otherwise be used productively, is lost due to disposal of mining waste.

## 3.6 IMPACT OF INDUSTRIALIZATION ON THE ENVIRONMENT

To meet the growing requirement of the increasing human population large scale manufacture of essential goods is necessary. Small factories to big industries have come up for mass production of goods. Industrialization is important for the development of a country. But industrialization that disregards environmental concerns led to environmental degradation like the following reasons:

- Natural resources used as raw materials by industry are depleting rapidly.
- Industries generate lot of toxic gases, and liquid effluents leading to environmental degradation.
- Industries generate large amount of waste, which pile up in the environment. Disposal of waste not only needs land but also pollutes the environment and poses hazards to human health.
- Industries use up a lot of fossil fuels as source of energy. (Refer to lesson-2, Subsection 2.1.1 on energy to know how fossil fuels are formed). Accelerated consumption of fossil fuels is depleting their stock as they are limited and non-renewable. But burning of fossil fuels releases  $\text{CO}_2$  in the atmosphere leading to global warming about which you shall learn later (lesson-14).





**Notes**

**3.7 IMPACT OF MODERNIZED AGRICULTURE ON ENVIRONMENT**

Increase in food production to achieve self sufficiency is an important objective. Intensive agriculture unfortunately, may lead to serious damage to environment. Some of these are listed below.

- Forests have been cleared transformed into farmlands for growing food crops.
- Excessive irrigation and poor drainage causes water logging and kill plants.
- **Pollution by agrochemicals**

Increased use of synthetic fertilizers causes to serious environmental problems. For example, unused fertilizers from agricultural fields are carried away by run off waters into lakes and rivers causing pollution. These agrochemicals may even seep through the soil and pollute ground water. Excessive nutrients enrichment of water bodies leads to ‘eutrophication’ (i.e. enrichment of water with nutrients particularly nitrates and phosphates triggers the explosive growth of green algae) may take place in water bodies and kill aquatic life.

Use of pesticides not only kills pests that destroy crop but may also kill many non pest organisms which may include even useful species of insects such as pollinators, birds and helpers in dispersal of plant seeds. Pesticides tend to accumulate and their concentration increases through the food chain and reach toxic levels in eggs, milk and other food items. (biomagnification)

- Agro- industrial wastes are generated. e.g. crop residues such as paddy, jawar, gram straws, cotton straws, sugarcane trash, and coconut shells etc. pile up causing environmental degradation.
- High yielding varieties (HYV) of food crops replaced various traditional crop varieties. Traditional agriculture was based on multicropping system, i.e. growing of food crops, fodder and firewood crops together. This practice had been replaced by monoculture i.e. growing of only one kind of crop (such as wheat etc) in a field of specific set of nutrients making soil unfit for growing other crops but is being considered again.



**INTEXT QUESTIONS 3.3**

Answer in one sentence:

1. Why are chemical pesticides considered harmful even though they kill insects’ pests that damage crops?

---



2. How do chemical fertilizers used in fields reach water bodies?

\_\_\_\_\_

3. List any three degradational effects of modern agriculture on environment.

\_\_\_\_\_

### 3.8 URBANIZATION AND ENVIRONMENT

Urban life is city life. More and more people are moving to cities from villages in search of jobs. The rural-urban migration is also partly due to population growth and poverty in the villages. Urbanization means permanent settlement of people in cities and this has resulted in degradation of the environment in various ways.

Industrialization opened up many new jobs.

Industries attracted rural youth to cities and their migration become easier with the improvement in communication and transport facilities.

Growth of cities lead to increasing demand of environmental resources leading to following changes -

- Cultivated land was lost forever for building houses, industries, roads and other facilities.
- A water supply system had to be developed to provide water for drinking and other domestic uses. Growing urban population created increasing demand for potable water. As a result, availability of water become more and more scarce.
- Industries, that were set up to provide the necessary goods for urban folk, generated industrial waste, leading to the pollution of the environment. In cities, black smoke emitted from industries, buses, truck etc. cause air pollution. Large amount of garbage is generated and not disposed properly. As a result garbage remains scattered and unattended. Domestic and industrial effluents are drained into rivers and lakes. High noise levels are a common feature of urban environment.
- An incessant influx of people into cities and shortage of housing result in development of slums and squatter areas. Inadequate facilities and lack of basic amenities in slums leads to unhygienic condition and social distortion and crime.



#### INTEXT QUESTIONS 3.4

Answer in one sentence

1. Why there is water scarcity in cities?

\_\_\_\_\_

## MODULE - 1

Environment through  
Ages



Notes

2. Where do minerals and metals occur naturally?

---

3. Give one consequence of mining.

---

4. Name one natural resource that is getting depleted due to industrialization.

---

### 3.9 ENVIRONMENTAL BACKLASH

You are now very well familiar with the kind of environmental devastation caused by various human activities. Floods, drought, acid rain, oil spills are of common occurrence and they are largely due to the carelessness and callousness of humans towards the environment. Loss of wildlife and their habitat, disappearance of some of species such as cheetah from the country; Bhopal gas tragedy are examples of the environmental retort. At the global level, the problem of 'global warming' and 'ozone layer depletion' poses serious threat to human health and wellbeing.

#### 3.9.1 Local environmental backlash

##### (i) Salination of irrigated soils

In several areas over irrigation resulted in salt accumulation in the soil as water is lost from evaporation but the salts dissolved in water remains in the soil and accumulate progressively making the soil saline and unfit for cultivation and infertile.

##### (ii) Eutrophication

Eutrophication of a water body occurs when plant nutrients such as nitrates and phosphates are released by the action of aerobic bacteria on organic wastes entering a water body. These nutrients promote growth of algae (algal bloom). Algae consume all the oxygen and aquatic organism die due to lack of oxygen.

##### (iii) The Minamata disease

Plastic, caustic soda, fungicide and pesticide manufacturing factories release mercury along with other effluents in the water body nearby. Mercury enters food chain through bacteria –algae-fish and finally the humans. Fish died due to consumption of Hg. Those who ate these fish were affected by mercury poisoning which proved fatal in certain cases. The high concentration of Hg in water and in tissues of fish resulted from formation of soluble mono methyl mercury ( $\text{CH}_3\text{Hg}^+$ ) and volatile dimethyl mercury [ $(\text{CH}_3)_2\text{Hg}$ ] by the action of anaerobic bacteria.



#### (iv) Extinction of wild life species

The numbers of tigers and lions have dwindled, the great Indian bustard is endangered and the list of the animals and plants threatened to extinction is long and growing. The Kalu River near Mumbai is severely polluted by industrial waste and the Bombay duck, a favorite edible fish which was once common in this river has been lost forever. Tigers and lions are being killed for sport and by poachers.

### 3.9.2 Regional Environmental backlash

#### (i) Floods

Floods are a natural disaster and India is a flood prone country. Floods occur almost every year during the period monsoon, continuous heavy rainfall brings huge quantities of water into rivers which overflow and cause flood. The habitations close to the river get flooded resulting in loss of human life and property. This means heavy economic losses. The flood affected areas suffer from quite shortage of potable water often outbreak of epidemic diseases.

#### (ii) Drought

Failure of monsoon and absence of rain leads to drought. Rise in the average global temperature due to global warming will increase water use and may create water shortage. It is estimated that a 3°C. Global warming may reduce as much as 10% precipitation and creating water scarcity leading to drought conditions. Shortage of water would adversely affect agriculture, industries and plants communities. Animals that are unable to move to greener pastures will perish; humans will suffer from health problems.

#### (iii) Acid rain

Moisture laden air rises to higher altitudes and condenses to fall as rain or snow

Pure rain has a pH of 5.6 but in areas where industries burn oil and coal emit  $\text{SO}_2$  (sulphur dioxide) into the atmosphere and motor vehicles release  $\text{NO}_x$  (compound of nitrogen) into air, the rain becomes more acidic reaching pH of 2. This is because  $\text{SO}_2$  and  $\text{NO}_x$  dissolve in water vapour present in the atmosphere and forms  $\text{H}_2\text{SO}_4$  and  $\text{HNO}_3$ .

When acidic snow melts acid rain drops reaches water bodies and making them acidic. Acidic water kills aquatic fauna and flora. Acidic rain is toxic to trees and corrodes buildings, marble structures and archaeological monuments.

#### (iv) Oil spills

Sometimes there is accidental spill of crude oil and petroleum products into the sea by oil tankers and ships. A thin layer of oil covers sea surface depriving marine organisms of oxygen. Floating oil slicks kill marine life and severely affect ocean ecosystem.



## Notes

**3.9.3 Global backlash****(i) Biodiversity loss**

Dwindled forests the natural habitat of various plants and animals has vanished and so have vanished forever many valuable trees and animals. Some are on the verge of extinction while others are on the borderline. See table 9.1 for the disappearing floral and faunal treasure of our country. (See lesson 9)

**(ii) Global warming and green house effect**

Green house is a glass chamber in which heat or solar radiations is trapped and plants grown in its closed warm environment.

Industrialization and urbanization have led to emission of large quantities of carbon dioxide into atmosphere from burning of fossil fuels. Increased CO<sub>2</sub> concentration in the atmosphere does not allow heat radiations given out by earth, to escape into the outer space. Increased atmospheric concentration of CO<sub>2</sub> has raised the average global temperature causing global warming. Consequences of global warming include melting of snow caps and rising of sea level, rising temperature of the earth will cause polar ice caps to melt leading rise in sea level. Excessive heat expands water. Sea level rise cause flooding of coastal cities and damage coastal ecosystems like marshes and swamps. Global warming may change rainfall pattern; lead to early maturation of crops and reduce grain size and yield of crop.

**(iii) Collapse of marine fisheries**

As already mentioned, acid rain has toxic effect on ecosystem. Global warming has driven marine fish towards cooler northern parts of the earth. Others are swimming to reach the cool deeper realms of ocean. The temperature of northern sea, it is estimated, to have increased by 1°C in the last twenty-five years, several species of fish and other marine animals have permanently moved to cooler northern regions.

Smaller fish are able to move faster to cooler areas away and the elevated temperature is taking its toll no larger fish, some of which are likely to become extinct. This change in behaviour of fish has led to collapse of marine fisheries and loss of livelihood for many - many fisher folk.

Other reasons for collapse of marine fisheries is the dumping of massive amount waste into the sea. The waste dumped with the sea include sewage and garbage generated by people living in coastal areas and industrial waste from industries. Run off from agricultural fields carrying fertilizers and pesticides are brought by rivers to the sea. Fertilizers cause “eutrophication.” Oil spills and oil slicks also kill marine life.

**(iv) Ozone layer depletion**

The ozone layer in earth’s atmosphere prevents harmful UV radiations of sun from reaching earth’s surface. CFCs(Chlorofluorocarbons) used in refrigeration, air conditioning, cleaning



solvents, fire extinguishers and aerosols have damaged the ozone layer or ozone shield particularly over Arctic and Antarctic. 30-40% reduction in the ozone layer may cause sunburn, fast ageing of skin, skin cancer, cataract, cancer of retina, genetic disorders, and reduced productivity in sea and forests.

### 3.10 ENVIRONMENTAL DEGRADATION- A THREAT TO SURVIVAL

You have now learnt how various human activities have caused irreparable damage to land, air and water and consequently to the organisms that inhabit them. Primitive humans struggled with nature for their survival as you have read in the earlier lessons. As human beings became more civilized and through the progress of science and technology they created various luxuries of comfortable living. But population explosion coupled with human greed for progressive prosperity and comfort has exploited and degraded the environment mercilessly to such a large extent that human survival itself is now threatened.

Contaminated food, water and air is taking its toll on human health. Toxic chemicals and harmful radiations have the potential of causing serious problems of human health.

Asthma, pulmonary fibrosis, pneumoconiosis are caused due to air pollution. Long exposure to pollutants in the working place such as mines, textile mills, poultry, crackers, sand blasting and chemical industries cause respiratory diseases. Carcinogenic chemicals and ionizing radiations in the environment have been responsible for cancer.

The enormously large population means reduced job opportunities, unemployment and related stress. Stress may also due to job pressure, money problems, uncomfortable living and dislike for work or workplace. Asthma, ulcers, diabetes, hypertension, depression, schizophrenia are **stress related** diseases and increasing rapidly.

Degraded quality of life and continuous health problems lead to mental problems. Environmental health and well being are the most valuable possessions of humans. These are fast getting lost due to the fast deterioration of the environment.



#### INTEXT QUESTIONS 3.5

Answer in one or two words but not more than one sentence-

1. Name the chemical responsible for Minamata disease.

\_\_\_\_\_

2. Why do herbivores increase in number in the forest where lions have been killed by poachers?

\_\_\_\_\_

## MODULE - 1

Environment through  
Ages



Notes

## Environmental Science Senior Secondary Course

3. State one reason for excessive floods due to human activities.

---

4. What is the pH of pure rain water?

---

5. What combines with seawater to form oil slick?

---

6. Expand CFC.

---



### WHAT YOU HAVE LEARNT

- We depend on environment for survival as it gives us oxygen to breathe, food to eat and water to drink.
- We also get fibre, medicines, fuel etc. from environment.
- As growth of human population, spread of became agrarian culture and industrialization lead to the environmental degradation in two ways (i) depletion of natural resources (ii) pollution of the environment (air, water and soil)..
- Natural resources have been depleted through deforestation, excessive use of fossil fuels; mining etc. air has been polluted by toxic gases emitting from motor vehicles, toxic wastes discharged into water bodies.
- Better medical facilities and food for all has increased longevity and cut down infant mortality and death due to epidemics. This has resulted in increase in population.
- Demands of increased population like land for housing and cultivation of food crops, industrialization, fossil fuels as source of energy resource for industries and homes, ground water have been depleted and air, water and soil polluted.
- Humans have cut down trees and cleared forests to obtain firewood and timber and to get land for agriculture and human settlements. Deforestation has resulted in serious loss of biodiversity.
- Modernized agricultural practices have provided food for teeming millions but created problems of land erosion, environmental pollution from fertilizers and pesticides.
- Humans have moved from villages to cities in search of better employment opportunities, education and health facilities, resulted in formation of slums which suffer from unhygienic conditions.
- The consequences of depleting natural resources and environment pollution are looking the face of humans. Examples are: Bhopal Gas tragedy, Minamata disease in Japan at





the localized levels; floods, drought; oil spills and collapse of marine fisheries at the regional level. The backlash at the Global level is represented by global warming, ozone depletion and loss of biodiversity.

- In a nutshell, human survival itself is threatened due to the damage done to the environment by humans themselves.



### TERMINAL EXERCISE

1. How is the utilization of fossil fuels related to a harmful impact on the environment?
2. List three reasons for human population explosion.
3. In what way has increase in human population degraded the environment?
4. State three reasons for deforestation.
5. Write an essay on “impact of deforestation”.
6. Why modern agriculture is held responsible for polluting air and water?
7. Why the modern influx of humans from villages to cities causing is serious concern to urban planners?
8. Why “green house gases” are considered dangerous?
9. Why do environmentalists think that “marine fisheries” may collapse, if we are not careful?
10. Write notes on:
  - i. Mining and environmental degradation
  - ii. Acid rain
  - iii. Global warming and green house effect
  - iv. Biodiversity loss



### ANSWER TO INTEXT QUESTIONS

#### 3.1

1. Deforestation/depletion of fossil fuels/depletion of minerals/air, water or soil pollution etc.
2. Longevity due to better medical facilities/ availability of food..
3. Because natural resources are limited/degradation of environment is a threat to survival.

#### 3.2

1. Cutting down trees to clear forests
2. For cultivation/timber/fuel wood/building houses etc.
3. Biodiversity loss/soil erosion/floods/loss of CO<sub>2</sub> sink etc.

## MODULE - 1

Environment through  
Ages



### Notes

4. Forest is natural habitat of wild animals
5. Roots hold soil in place.

#### 3.3

1. They also kill useful insects.
2. The unused fertilizers from fields flow into water bodies during rains.
3. Conversion of forest into agricultural fields/water logging/use of agricultural/agroindustrial waste.(Any three)

#### 3.4

1. Consumers than available water
2. Under the soil and inside it.
3. Depletion of useful metals/loss associated flora and fauna/land subsidence/landslides
4. Fossil fuels/water/metal ores.

#### 3.5

1. Hg/Mercury
2. No lions to feed on them and reduce their number.
3. Rise in temperature due to green house gases/melting of ice caps.
4. 5- 6
5. Less volatile components of oil
6. Chlorofluorocarbons