

9

ENVIRONMENT MANAGEMENT

9.1 INTRODUCTION

The day is not far off when a drop of water is going to cost us as much if not more than a drop of oil! And soon, we will have no more forests left to clear!

Worse still, whatever little land will be left for agriculture, will have no capacity to grow anything! Alarming, isn't it?

Our environment is going from bad to worse and will soon lose its ability to support life! Are you wondering why?

To understand the magnitude of these environmental problems and to find remedies for them, we will study environment management in this lesson.

9.2 Objectives

After studying this lesson you will be able to:

- define the term 'environment degradation';
- identify the causes of 'environment degradation';
- specify its ill effects on man;
- explain the term 'eco friendly' and list some eco friendly and non-eco friendly products and practices;
- examine the role of government and individuals in contributing to a better environment.

9.3 Environment Degradation

What do we mean by environment degradation?

— Environment includes all forms of life (plants, animals, human beings), air, water, land, buildings, parks, vehicles, etc.

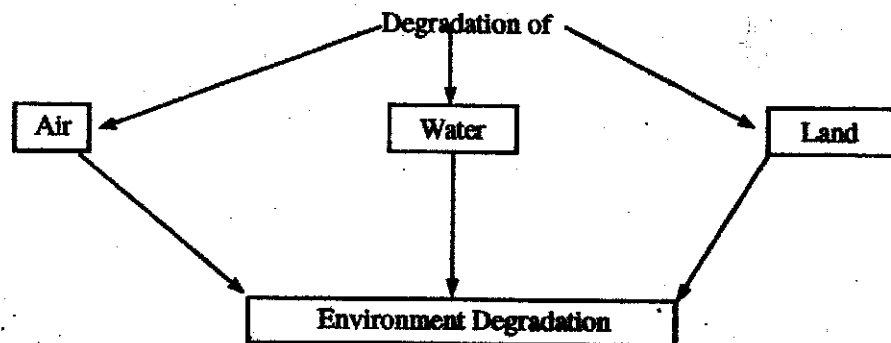
— **Degradation** refers to an **unfavourable change**.

Environment degradation refers to an **unfavourable change of our surroundings**

For example, if we keep throwing garbage in a park, after some time there will be a large heap of garbage and the place will start smelling. Moreover, it will also become a breeding ground for pests like rats, flies, mosquitoes, etc.

Such an **undesirable change** is referred to as **degradation**.

You can observe such environment degradation not only on land but also in water and air.



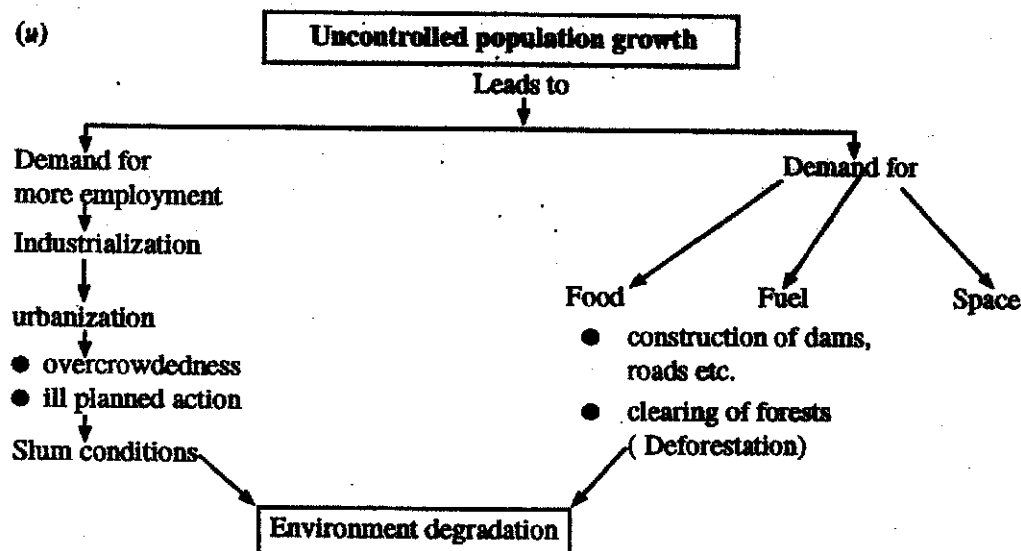
9.4 Who Causes Environment Degradation?

You must be aware that most of the environment degradation has been caused by man!

Can you list some of the causes?

Tally your list with the following:

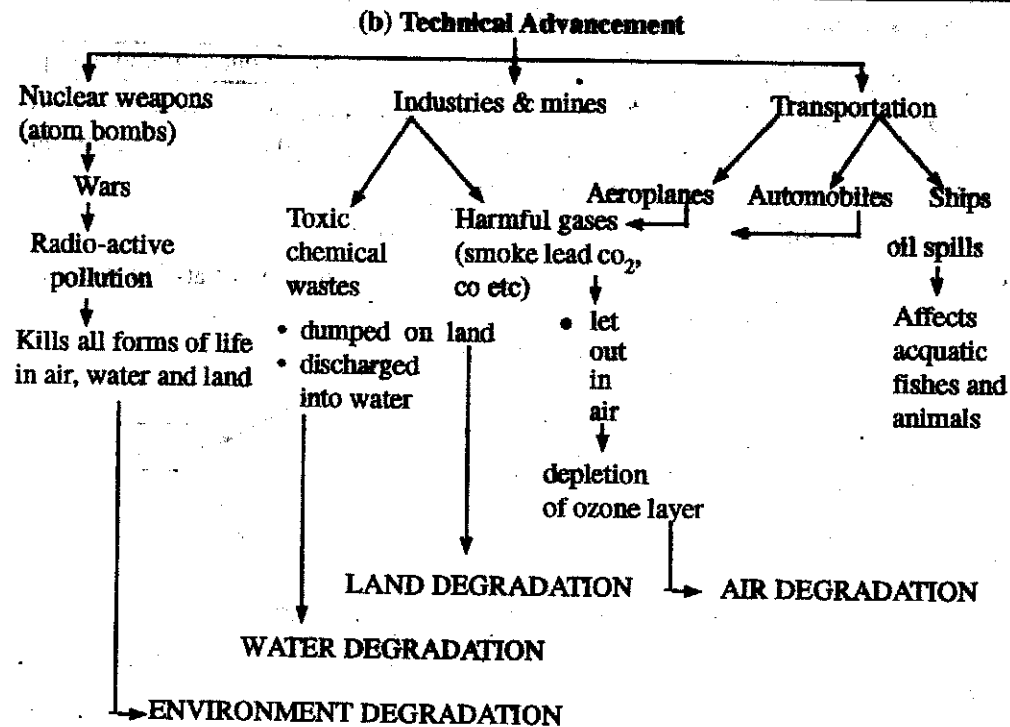
- (a) Uncontrolled population growth
- (b) Technical advancement
- (c) Poor agricultural practices
- (d) Improper personal habits
- (e) Natural causes
- (u)



Industralisation is growth of industries
Urbanisation —when people from rural areas migrate to cities/ towns in search of employment or to have better living conditions.

Slums: Include jhuggies, temporary raw houses mostly inhabited by squatter (They lack basic facilities) .

Ozone layer
is a thin protective layer of air around the Earth which protects us from over exposure to ultra violet rays of sun.
Co₂ - Carbon dioxide
Co - Carbon monoxide



INTEXT QUESTIONS 9.1

1. Choose (✓) the right answer.

(a) Environment consists of

- (i) air that living things breathe
- (ii) water, land and living things
- (iii) all living and non-living things
- (iv) water, land and non-living things

b) Environment degradation refers to unfavourable change of

- (i) human interactions
- (ii) water pollution
- (iii) land degradation
- (iv) surroundings

2. Match the following items in Column A with the corresponding items in column B

Column A

Column B

- | | |
|----------------------------|-----------------------|
| (a) Over crowdedness | (i) fuels |
| (b) Ships | (ii) vehicles |
| (c) Radio-active pollution | (iii) chemical wastes |
| (d) Aeroplanes | (iv) slum conditions |

(e) Industries

(v) nuclear weapons

(f) Construction of roads

(vi) Oil spills

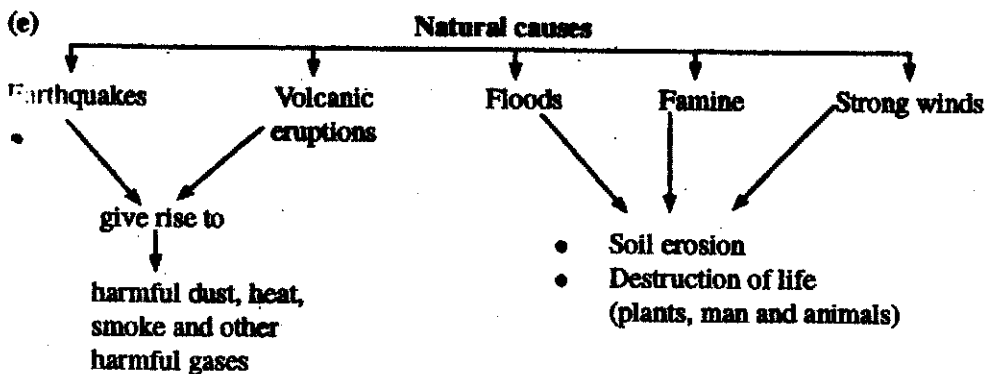
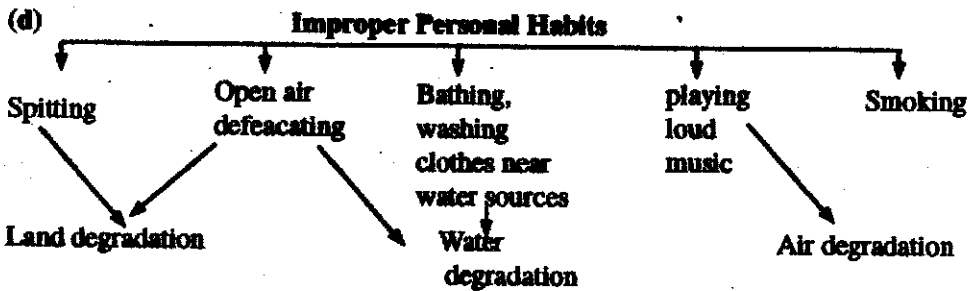
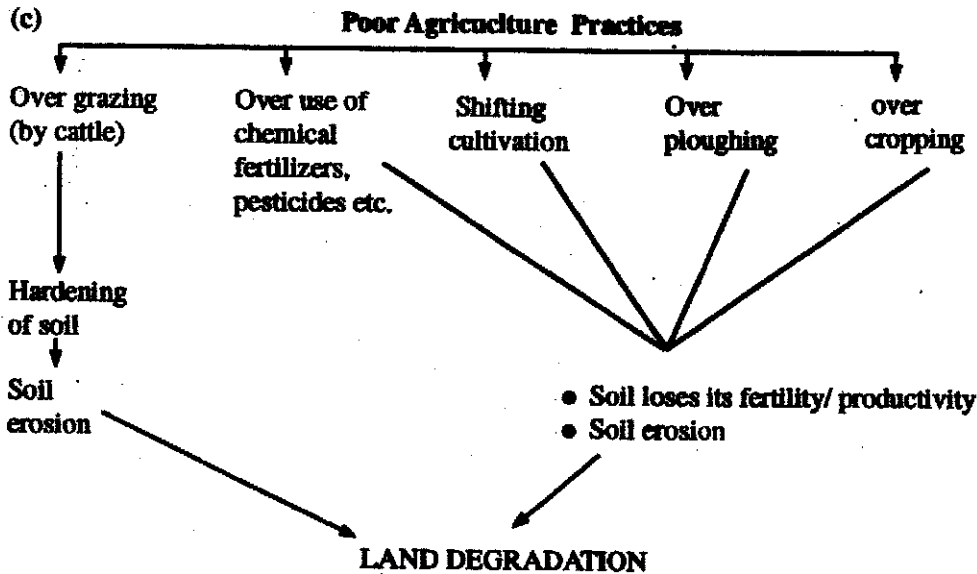
(vi) depletion of ozone layer

(vii) deforestation

Shifting cultivation:
In this trees are cut and burnt and plants are sown in the ash.

Over cropping :
When too many crops are raised at the same time or with very little time gap.

Soil erosion :
When the top fertile layer of soil gets carried away by wind, water etc. It is called soil erosion.



INTEXT QUESTIONS 9.2

a) Fill in the blanks:

- (i) Poor agricultural practices lead to soil _____ and makes the soil lose it's _____.
 - (ii) Earthquakes and volcanoes give rise to harmful _____, _____ and _____.
 - (iii) Over grazing by cattle leads to _____ and ultimately to _____.
 - (iv) Poor personal habits like _____ and _____ can result in land degradation whereas habits like _____ and _____ can lead to air degradation.
 - (v) Floods, famine and strong winds can cause _____ and _____.
-

9.5 Effects of Environment Degradation on Man

So far, you have seen how environment degradation is caused in different spheres like land, air and water. Obviously, it is bound to affect us in some way or the other.

Let us see the different forms of environment degradation and how they affect us?

- (a) Soil / land degradation
 - (b) Deforestation (clearing of forests)
 - (c) Degradation of air
 - (d) Degradation of water
 - (e) Slum conditions
- (a) Soil / land degradations.

Fertilizers like urea, which are used to increase the yield of crops

Pesticides are chemicals which are used to kill pests which harm the crops.

Do you know that soil is the top fertile layer of land in which plants grow? Have you ever wondered as to what happens to so many leaves that fall on the ground every autumn? Yes, they disappear into the ground after some time. But do you know why?

Actually, soil contains some very important microorganisms which help in decaying waste materials like dead plants and animals into simpler substances. In this process, they release nutrients which help to increase the fertility of the soil.

But when we use too much of chemical *fertilizers, pesticide, etc.* or *dump wastes* from mines and industries on land, these microorganisms get killed and eventually fertility of soil is effected.

Do you know that sprays like pesticides also penetrate plants, fruits and vegetables and enter man and animals when consumed. It causes deadly disease like cancer and also affects the nervous system. Traces of pesticides can also be detected in milk.

Do you remember what is soil erosion? (Refer back to Section (c) of part 9.2)

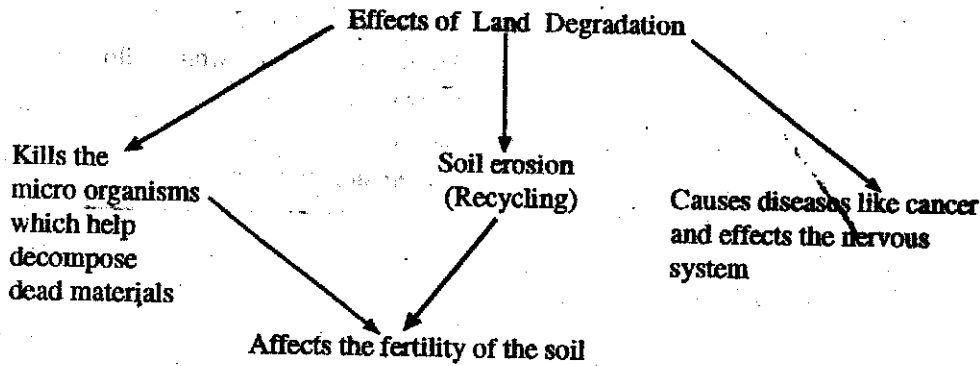
The top layer of soil which is fertile is bound by roots of the trees. But with clearing of forests, this soil gets exposed and gets carried away by strong winds, floods, glaciers, etc. This is called soil erosion and it affects the fertility of soil.

Let's Do and See :

Take two boxes and fill them up with soil. Tilt them at an angle. Sow grass in one and leave the other one bare. Water them and collect the water which runs off the bottom of

slopes. Note the colour of the water. Calculate the amount of soil (when water dries up). You will notice that the amount of soil lost is more in the case of the barren box as compared to the one with grass. This experiment shows that plants help bind the soil and prevent soil erosion.

In short,



(b) Deforestation

Forests are very important to us as they provide us wood, medicinal plants and many raw materials for commercial and domestic use. Most important, they supply oxygen to us and influence the weather conditions. They cause rainfall, maintain temperature and control wind and humidity.

Forests are referred to as 'oxygen banks'.

You already know that they check soil erosion. In addition, forests are also responsible for recharging our natural springs. Last but not the least, they provide home for wild animals and birds.

What happens when there are no roots of trees to bind the top soil?

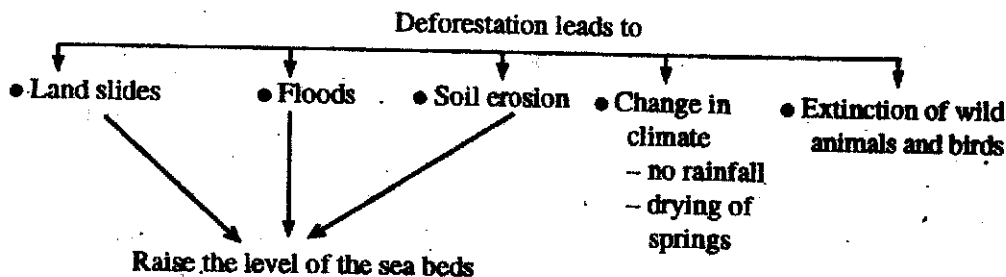
Yes, it leads to —

- land slides
- floods and
- soil erosion

All this leads to raising the level of the sea beds.

Where there are no forests, there is no rainfall, which affects the climate and ultimately leads to drying of springs, lakes and rivers. You must have seen or heard elders talking about springs which existed once upon a time. Now all you can see is either land or marks of water on the stones. Wild animals and birds are worst affected as they die out for ever!

In short,



INTEXT QUESTIONS 9.3

1. Complete the sentences of column A with the help of column B

| Column A | Column B |
|--|---|
| (a) Trees help to check | (i) wastes from industries |
| (b) Chemical fertilizers | (ii) change in temperatures |
| (c) Deforestation leads to | (iii) kill microorganisms which helps to improve soil fertility |
| (d) Fertility of soil is affected by mineral | (iv) land slides and floods. |
| | (v) soil erosion by their roots. |

(c) Degradation of Air

You can see the effects of air degradation as follows :

- (i) Acid rain
- (ii) Depletion of ozone layer
- (iii) Global warming
- (iv) Leakages and man-made disasters
- (v) Diseases

(i) Acid Rain

Smoke from vehicles, industries give rise to harmful gases like sulphur dioxide and oxides of nitrogen. They react with water vapour in the clouds to form dilute acids and come down as acid rain.

This acid rain is very poisonous and affects all kinds of plants, fishes and animals. It even affects the buildings and monuments. Erosion of the Taj Mahal is one such example.

(ii) Depletion of Ozone Layer

Do you remember what is ozone layer? (Refer back to section 9.4 part 'b')

Yes, ozone layer protects the earth from over exposure to harmful ultraviolet rays of the sun. This ozone layer gets destroyed by harmful gases used in refrigerators and fire extinguishers. Over exposure to ultraviolet rays can cause skin cancer and eye problems like cataract and blindness. It also stunts the growth in plants.

(iii) Global Warming

There are naturally occurring gases in the atmosphere which can absorb radiations of the sun. So they are called "green house gases". Because of their presence, not all solar radiations reaching the earth are reflected back to outer space but some of the radiations are held back by these green house gases. This process is called the *green-house effect*. This effect makes the temperature on earth warm enough for life to flourish.

But because of human activities like deforestation, forest fires, burning of fuels, etc., tons of gases like CO_2 , methane, etc., are released in the atmosphere. The gases absorb the solar radiations and form a blanket around the earth, preventing the radiations from reflecting back into space.

This result in an increase in atmospheric temperature which is felt all over the world and is known as 'global warming'.

You must have noticed that in past eight-ten years, summers are getting hotter whereas winters are getting less cold. Even the rainfall is unpredictable. Every year there is an increase in earth's temperature!

(iv) Leakages and Man-Made Disasters

Time and again, man has caused massive environment degradation — killing all kinds of life through leakages and disasters like war and atom bombs. For example, the world still mourns over deaths of lakhs of people who got killed when a nuclear bomb was dropped in Hiroshima during the World War II. Its effects were seen in handicapped children born several years later to mothers exposed to the radiations. It also affected the plants, animals, aquatic life and the soil for many years.

Years later, another man made disaster was caused when oil fields were burnt during the Gulf War between Kuwait and Iraq. The oil leaked into the sea. The fire spread even to the sea and continued for months. It killed infinite number of aquatic fishes and animals and the smoke polluted the air for months.

Industrial leakage's have also been responsible for many deaths. For example, in Bhopal a gas leakage from a pesticide factory, killed thousands of people. Those who survived are still suffering from respiratory problems like bronchitis, asthma, as well as eye and skin problems.

In yet another incident, thousands of people from Chernobyl town in Russia had to be evacuated because of radioactive leak. These radioactive particles get carried away by wind to far off places. Finally they settle down and cause soil, plant and water degradation. From here they enter man and animals through the food chain. Thus radioactive pollution affects all kinds of life.

(v) Diseases

All the above factors are responsible for most of our respiratory diseases like cough and colds, bronchitis, asthma, lung cancer and also irritations like itching, watering and smarting of the eyes.

People from heavily populated and polluted cities like Delhi and Calcutta are more prone to these diseases.

Food Chain

A sequence of organisms which is food or the next higher organism e.g. grass is eaten by deer which is eaten by tiger.

INTEXT QUESTION 9.4

1. Choose the right answer and fill in the blanks :

- _____ (ozone layer / acid rain / heat of sun) is responsible for destruction of life and it also erodes buildings.
- Depletion of ozone layer can lead to _____ (skin cancer / anaemia / respiratory disease) and problems of _____ (bones / liver / eyes)
- Global warming has resulted in increase in _____ (cold climate / temperature / rain fall)
- Degradation of air is mainly responsible for diseases of _____ (respiratory, circulatory digestive) system like _____ and _____ (jaundice / asthma / cholera / bronchitis)

- (e) Effect of nuclear explosions can be seen in _____ (normal weight / handicapped / happy) children born to mothers exposed to radiations after many years.

(d) Water Degradation

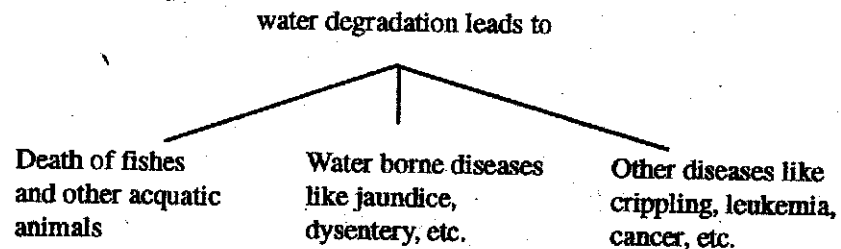
Water plants take in CO_2 (expired by water animals) in presence of sunlight and release O_2 (dissolved) which is taken in by animals but foam and froth do not let sunlight pass through them. Thus it cuts out the O_2 supply.

Have you observed that the rivers, lakes and canals are no longer crystal clear? Most of the rivers, especially those near the towns and cities give out a foul smell. You can even see foam and froth floating on the surface of water. Foam cuts out the oxygen supply to fishes and animals living in the water and they eventually die. Wastes from sewage are mainly responsible for most of the diseases like

- jaundice
- diarrhoea and dysentery
- typhoid
- gastroenteritis and
- malaria

In addition to these, water is further degraded by chemical wastes of industries causing serious diseases like leukemia, cancer, allergies, crippling, etc.

In short,



(e) Slum Conditions

People from rural areas migrate to cities and towns in thousands in search of employment. But where do they live? Yes, they make a temporary mud / tin huts with temporary roofs of plastic sheets with many people living inside and few or no facilities of water, electricity cleanliness, etc.

A cluster of such huts together are called slums. Have you seen such slums? Can you specify their locations? Yes, mostly they are located near rivers and factories, under bridges or along the roads.

If you go into any of these slums, the first thing you notice is over crowding, of people, children in torn, dirty clothes or some without a decent covering, smelly dirty lanes, open choked drains, piles of foul smelling garbage flies and mosquitoes, etc. Worst of all, all around these slums, within half a kilometre, there are signs of open air defecating with flies all around them. If they are near a river, they treat the river as an open bathroom where they can perform activities like bathing, washing clothes, defecating, etc.

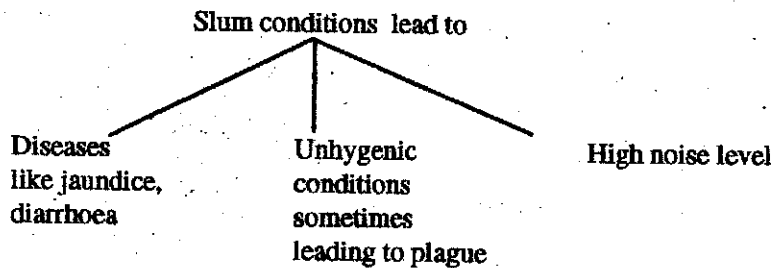
Do you remember the recent Surat plague which scared all the people of the country and took so many lives? Improper garbage disposal was the reason. Rats thrive in such places. People living in such unhygienic conditions, without the basic facilities usually suffer from:

- Jaundice
- Parasite worms

- Diarrhoea
- Dysentery
- Scabies
- Tuberculosis
- Malaria and
- High noise level

Loud noise level can lead to permanent deafness, increase in blood pressure, stress, anxiety and nervous breakdown.

In short,



INTEXT QUESTIONS 9.5

1. Choose from the answers given in brackets.
 - (a) Name three diseases which occur due to improper sewage disposal in the water.

(i) _____ (ii) _____ (iii) _____

(jaundice, tuberculosis, malaria, typhoid)
 - (b) List three diseases which occur due to chemical wastes of industries.

(i) _____ (ii) _____ (iii) _____

(crippling, leukamia, allergy, malaria)

9.6 Ray of Hope

Still, all is not lost. If we want, we can still save our earth! But the only way is that we must try to adopt products and practices which do not degrade the environment.

Such products and practices are called '*eco friendly*'.

The word 'eco' is derived from the word 'ecology' which is concerned with the relationship between plants, animals and man and environment. By eco friendly products and practices we mean that these products and practices are not harmful to the environment.

These products and practices are considered eco friendly on the basis of their

- (a) production
 - (b) use
 - (c) disposal
- (a) **Production** : If the manufacturer, while producing, follows all the safety and preventive measures or takes care of its waste products, e.g. treating the sewage and industrial wastes

before letting them in the water ways, then such products are called 'eco friendly'.

(b) **Use** : While using, if the product does not harm the environment by giving out poisonous gases or wastes e.g., lead in petrol is very harmful but if it is removed from petrol then the petrol before use, becomes 'eco friendly'.

(c) **Disposal** : After use the packaging and left overs should be such which are biodegradable or can be recycled. For example, polythenes cannot decompose and thus become a nuisance in the form of choked drains etc. They are non-biodegradable. On the other hand, paper bags can decompose or even be recycled to make other products like cardboard boxes, newspaper etc. So paper bags are considered eco friendly. Products which do not take care of the environment and increase its degradation are called non - eco friendly products.

Let us list some eco friendly and non-eco friendly products.

| Non-eco friendly products | Eco friendly products |
|---|---|
| (a) petrol | unleaded petrol |
| (b) crude motor oil | double refined motor oil |
| (c) synthetic paints | water based paints |
| (d) synthetic cloths like nylon, acrylic etc. | jute and canvas cloths |
| (e) polythene plastic bags | paper bags |
| (f) traditional chullahs | — smokeless chullahs |
| | — solar cooker |
| | — biogas |
| (g) thermocol glasses | earthen cups (Indian Railways have introduced these cups serving for tea) |

Ministry of Environment and Forests has launched an 'Eco Mark' Scheme in Feb'91 with the symbol shown below. It contains an ISI mark as it is set by Bureau of Indian Standards,

along with an earthen pot which symbolises bio-degradability and closeness to the environment.

Eco mark is given to certify that the products fulfill a minimum pollution control standard and achieve high environment friendliness in production, packaging and waste disposal.

Fig. 1

Eco friendly practice can also be adopted instead of non-eco friendly practices some of which are listed below.

Non-eco friendly practices

1. Throwing household garbage on streets or down the hill (in case of hills)

Eco friendly practices

- (1) Household wastes can be used to make manure for kitchen garden. Such manure helps to increase soil productivity, e.g. a compost pit in your garden. Do you know that the inmates of Tihar Jail have started converting their garbage into rich manure; they have not only got rid of the

Biodegradable:
Which can decompose or disintegrate into simpler substances and be a part of the soil.

Recycled:
Which can be reused, e.g. paper can be reused to make board boxes or inferior quality paper.

- source of disease but are also selling this manure and earning.
2. Dumping municipal wastes
 Recycling: Planned recycling can be profitable. Domestic wastes can be extracted for industrial use. For example, paper can be used for repulping; textiles for paper making; metals and glass for remelting; plastics for production of inferior grade plastics.
 3. Industrial mine wastes are dumped on the land and water
 Setting up sewage treatment plants near the industries; introducing pollution control in industries;
 4. Industrial gases emitted in the air
 Separating pollutants from harmless gases and making them harmless before releasing them in the air.
 5. Open air defaecating
 Constructing 'Sulabh Sauchalayas', especially near the slums.
 6. Deforestation (clearing forests)
 Planting trees (aforestation) on massive scale.

INTEXT QUESTIONS 9.6

1. Choose the most appropriate answer:
 - (a) Eco friendly products mean things which are
 - (i) harmful yet economical to the environment
 - (ii) harmful to the environment
 - (iii) not harmful to the environment
 - (iv) economical to the environment
 - (b) Eco friendly products are given
 - (i) FPO mark
 - (ii) AGMARK
 - (iii) ISI mark
 - (iv) ECO mark
 - (c) Products are termed eco friendly on the basis of their
 - (i) production, use and disposal
 - (ii) disposal, recycling and dumping
 - (iii) production, distributing and recycling
 - (iv) use, disposal and distributing
2. Given below are some eco friendly non-eco friendly products. Categorise them under their appropriate headings :
 polythene bag, water based paints, jute, synthetic garments, unleaded petrol, solar cooker, earthen cups, crude motor oil, paper bag, canvas.
3. Match the list A and B and follow the pattern given in the example below.
 e.g.: (A) Deforestation (B) afforestation
 - (a) open air defecating (i) pollutants separated, made harmless before

- | | |
|-----------------------|-----------------------------------|
| (b) household wastes | letting out in air |
| (c) industrial gases | (ii) recycling for industrial use |
| (d) industrial wastes | (iii) Sulabh Sanchayala |
| (e) municipal wastes | (iv) manure for kitchen |
| | (v) sewage treatment plants |
| | (vi) land treatment plants |

9.7 How can the Government Help in Controlling Environment Degradation?

Since the last fifteen years, man has become conscious of long-term effects of environment degradation. Government plays an important role in controlling the degradation of the environment. Government should —

(a) At the industrial level:

- ensure that all industries are located far away from cities
- specify the heights of chimneys emitting smoke
- enforce strict laws for pollution control in industries as well as vehicles
- encourage industrialists to improve the design of the machinery and keep it well maintained
- insist on training of staff to adopt measures for minimising pollution
- ensure that all industries set up waste treatment plants
- encourage the industries to link and reuse the raw wastes of each other, wherever possible, for example steel mills can use worn out parts of automobile industry

b) At household level:

- insist on people adopting family planning norms
- provide efficient waste disposal systems for domestic wastes
- educate the public on the causes and effects of environment degradation.
- involve the poorest members of society in all environment management programmes so that they too feel responsible
- motivate the people to use biogas, solar cooker, solar heater etc.

c) At agricultural level:

- ensure healthy farm practices like using natural manures, crop rotation, mixed cropping etc.
- spread awareness among farmers of effects of poor healthy farm practices
- ensure development of waste lands
- motivate people to grow trees and care for them
- conserve wild life by maintaining the forest reserves.

d) At management level:

- ensure that environment conservation gets top priority
- should not only concentrate on employment, food production and industrialization but should concentrate on environment also
- should emphasise both on cleaning and prevention
- ensure cooperation between Ministries of all neighbouring States.
- check corrupt practices at all levels for misuse of funds
- provide loans to industrialists so that old machinery can be replaced.

9.8 How can we Help in Environment Conservation at our Own Level?

a) At home

- use solar cookers and solar heaters as far as possible
- maintain sanitary conditions and adopt hygienic habits
- ensure proper disposal of refuse, human excreta, etc.
- adopt family planning norms and keep the family small
- save water for your grandchildren and their families (use minimum water for all activities and avoid wastage)
- do not use loud speakers to celebrate functions but play music softly
- avoid smoking.

b) Going out

- live as close as possible to your office / school / college
- share cars and use unleaded petrol, if available
- use bicycles - good for your health too!
- use public transportation as much as you can.

c) Close to nature

- each one plant one tree (take care of it too!)
- report any illegal felling of trees and cases of corruption, pollution, etc. to concerned authorities
- contribute in funds raised for wild life conservation
- spread awareness among your friends, families and relatives on how to make our Earth GREEN!

Waste land is the land which is degraded by sanitary land refills, or industrial mine wastes etc.

Sanitary refill are as municipal wastes after reducing them to smallest volume are dumped in an enclosed area outside the city. The refuse is covered with soil at end of the day to decompose it.

INTEXT QUESTIONS 9.7

1. Complete the following sentences in list A from list B

List A

List B

- | | |
|--|--|
| <p>1. Industries should be located</p> <p>2. Maintenance should be done of</p> | <p>(a) for pollution control</p> <p>(b) trained for minimising pollution</p> |
|--|--|

- 3. Strict laws should be enforced (c) linked with each other
- 4. Staff should be (d) industrial machines
- 5. Industries should be (e) outside the cities
- 6. Motivate people to use (f) trees and care for them
- 7. Grow (g) by maintaining forests reserves
- 8. Conserve wild life (h) solar cooker and biogas
(i) ensure cooperation

2. Correct the following statements :

- (i) People should have large families
- (ii) Poorer members of society should not be involved in management programmes.
- (iii) Household wastes disposal should not be cared for
- (iv) Waste lands cannot be cultivated for agriculture.
- (v) Healthy farming practices include overcropping and use of chemical fertilizers.

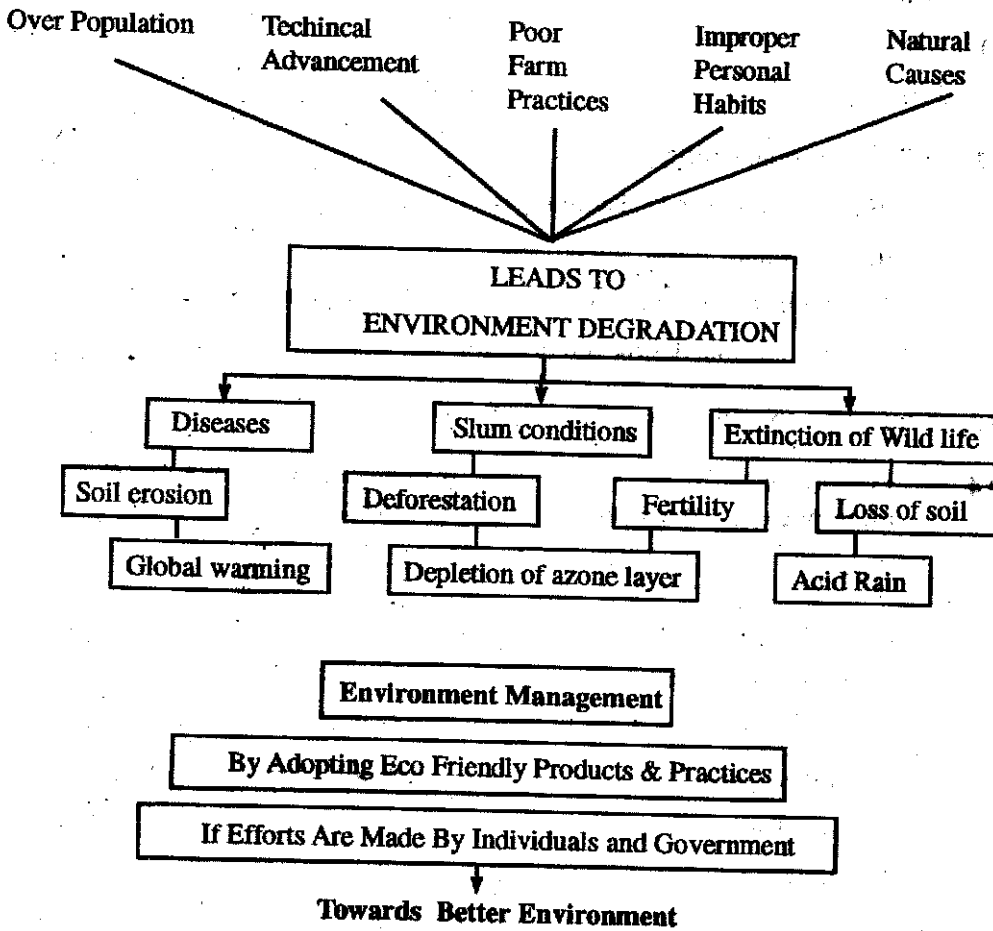
3. Fill in the blanks choosing the right word from the brackets given alongside

- (i) Management of environment should have a _____ (high / low / medium priority).
- (ii) Government should concentrate more on _____ (prevention / production / construction) of environment degradation.
- (iii) Loans should be _____ (given / not given) to replace old machinery.

4. State True or False (T/F)

- (i) We should adopt small family norms.
 - (ii) Loud speakers should be used to celebrate any function.
 - (iii) Smoking is good habit.
 - (iv) Bicycles should be used as far as possible.
 - (v) Each one of us should plant a tree.
 - (vi) You should not report any illegal felling of trees.
-

9.9 What You Have Learnt



9.10 Terminal Exercise

1. Define environment degradation with two suitable examples (other than that in the text).
2. What do you understand by the term 'eco friendly'? List two examples each of eco friendly products and eco friendly practices.
3. Explain how forests help in conserving the environment. Predict the effects of deforestation.
4. How does technical advancement lead to environment degradation?
5. Briefly explain the effects of over population on our environment.
6. Discuss the following effects of air degradation.
(a) acid rain (b) global warming (c) depletion of ozone layer.
7. You are 16 years old. How can you help to conserve the environment?
8. There are two friends. One lives in a city next to a slum whereas the other one lives in a clean hilly area. Who do you think will be more healthy of these two? Support your answer with reasons.

9.11 ANSWERS TO INTEXT QUESTIONS

- 9.1 1. (a) iii (b) iv
 2. (a) iv (b) vi (c) v (d) vii (e) iii (f) viii
- 9.2 (a) (i) erosion, fertility.
 (ii) dust, heat, smoke, harmful gases
 (iii) hardening of soil, soil erosion
 (iv) spitting, defecating in open air, smoking, playing loud music
 (v) soil erosion, destruction of all life.
- 9.3 1. (a) (v) (b) (iii) (c) (iv) (d) (i)
- 9.4 1. (a) acid rain (b) skin cancer and eyes (c) temperature
 (d) respiratory, asthma, bronchitis (e) handicapped
- 9.6 1. (a) (iii) (b) (iv) (c) (i)
 2. — eco friendly non-eco friendly
 — water based paints — polythene bags
 — jute — synthetic garment
 — earthen cups — crude motor oil
 — paper bags
 — canvas
3. (a) (iii) (b) (iv) (c) (i) (d) (v) (e) (ii).
- 9.7 1. (i) (e) (ii) (d) (iii) (a) (iv) (b) (v) (c) (vi) (h) (vii) (f) (viii) (g)
 2. (i) People should have small families.
 (ii) Poorest members should be involved in management programmes.
 (iii) Household waste disposal should be properly disposed.
 (iv) Waste lands can be cultivated for agriculture.
 (v) Healthy farm practices include mixed cropping and use of natural manures.
3. (i) high (ii) prevention (iii) given
 4. (i) True (ii) False (iii) False (iv) True
 (v) True (vi) False.
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