

**15**

ENVIRONMENT MANAGEMENT

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

**OBJECTIVES**

After studying this lesson you will be able to:

- define the term 'environment' and 'environmental degradation';
- identify the causes and adverse effects of environmental degradation;
- explain the term 'eco friendly';
- list eco friendly and non-eco friendly products and practices, and
- define the role of individuals and the government in contributing to a better environment.



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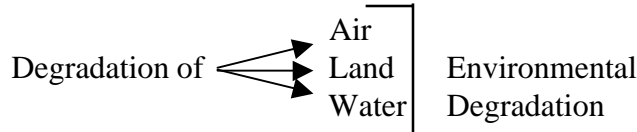
15.1 ENVIRONMENTAL DEGRADATION

What do we mean by environment?

Environment is our surroundings which include all forms of life (plants, animals, human beings), air, water, land, buildings, parks, vehicles, etc.

Our environment is in a dynamic state. It keeps changing every now and then. You would have observed many changes around you, like floods or drought in certain years, new industries, multi-storey buildings, new means of transport, etc. If these changes are favourable to life, then the environment is not harmed. However, unfavourable changes lead to degradation of the environment.

Environmental 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 environmental degradation not only on **land** but also in **water** and **air**.

15.2 WHO CAUSES ENVIRONMENTAL DEGRADATION?

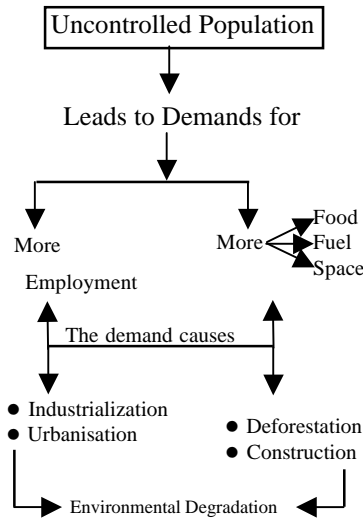
You must be aware that most of the environmental degradation has been caused by man! Take a paper and pencil and list some of the causes you can think of. Did your list include the following?

- Uncontrolled population growth
- Technical advancement
- Poor agricultural practices
- Improper personal habits
- Natural causes

Let us learn more about these causes.

15.2.1 Uncontrolled Population Growth

You are aware that our country's population is increasing every day. This leads to excessive demands on our environment in terms of food, fuels and space. More people means more demand for employment. As a result more industries, dams, roads and railway tracks are being constructed. This has led to industrialization and urbanisation, growth of slums, reduced forest cover and unhygienic living conditions. All these are affecting our environment leading to its degradation.

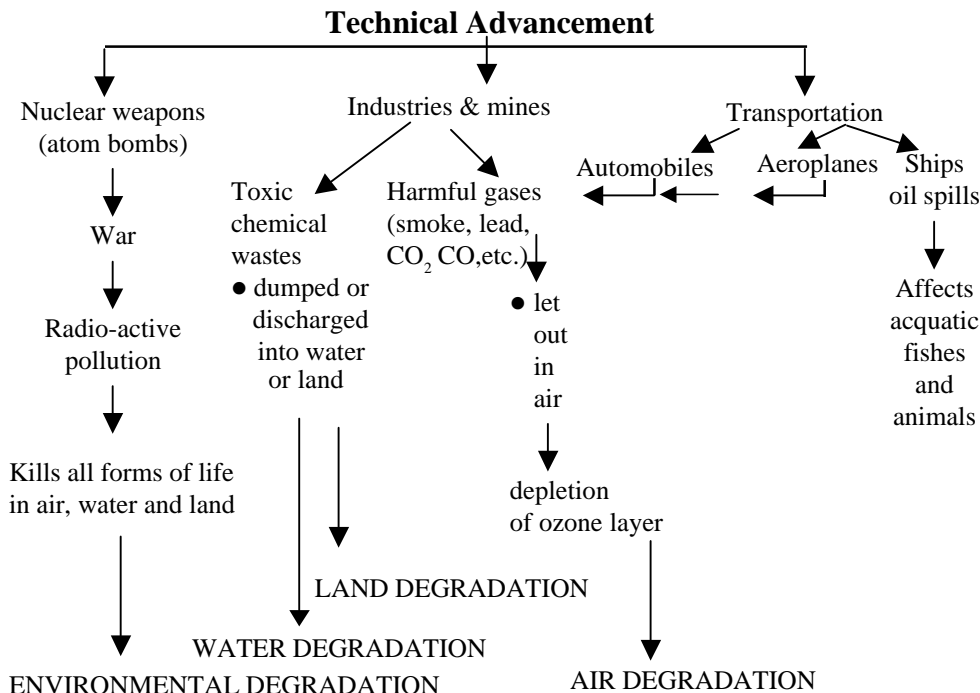


You can play a role in controlling the population and its consequent ill effects by delaying the birth of your first child by a couple of years deciding not to get married before the legal age (18 yrs – girls, 21 yrs – boys).

15.2.2 Technical Advancement

Today there is technical advancement in all walks of life. New models of cars, telephones including cellphones, and home appliances like washing machines, microwave ovens, etc. are flooding the market.

Our offices are also full of new gadgets. They are produced in industries which generate toxic chemical wastes, harmful gases and radio active pollutants during their manufacturing process. These pollutants kill all forms of life in air, water and land. The smoke generated by the industries, mines, automobiles and aeroplanes leads to the depletion of the ozone layer. Thus, our environment gets degraded by these technical advancements.



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Slums: Areas which have jhuggies (temporary houses mostly inhabited by squatters). These areas lack basic facilities such as water, electricity, drainage and sewage disposal.

Squatter is a person who occupies unused land, without having a legal right to do so.

Ozone layer

is a thin protective layer of air around the Earth which protects us from overexposure to ultra violet rays of sun.

CO₂ - Carbon dioxide
CO - Carbon monoxide



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INTEXT QUESTIONS 15.1

1. Select (✓) the right answer.
 - (i) Environment consists of
 - (a) air that living things breathe
 - (b) water, land and living things
 - (c) all living and non-living things
 - (d) water, land and non-living things
 - (ii) Environmental degradation refers to unfavourable change of
 - (a) human interactions
 - (b) water pollution
 - (c) land degradation
 - (d) 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) Automobiles | (ii) vehicles |
| (c) Radio-active pollution | (iii) chemical wastes |
| (d) Aeroplanes | (iv) slum conditions |
| (e) Industries | (v) air |
| (f) Construction | (vi) smoke |
| | (vii) nuclear weapons |
| | (viii) deforestation |

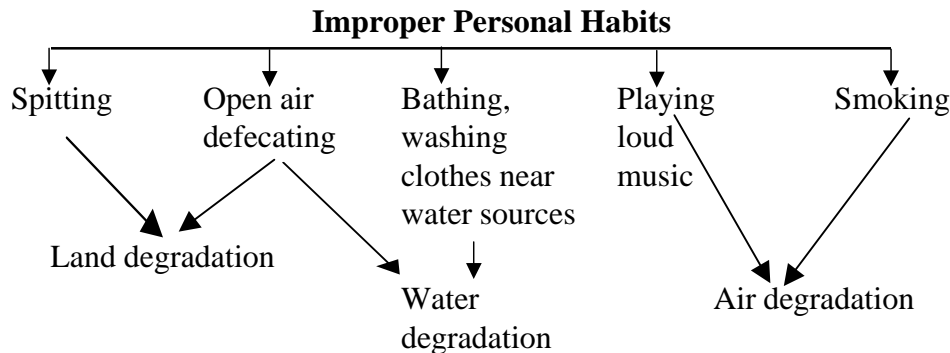
15.2.3 Poor Agricultural Practices

Our agricultural practices have also undergone change. Practices like over-grazing, excessive use of chemical fertilizers and pesticides, shifting cultivation, overploughing and overcropping have led to the hardening of soil and soil erosion. The soil has started losing its fertility and productivity. Thus, soil degradation has become an environmental concern.

15.2.4 Improper Personal Habits

Some of our unhygienic personal habits like spitting in public, defecating in the open, bathing and washing clothes near water sources, etc, has led to the degradation of land and water. Other habits like smoking and playing

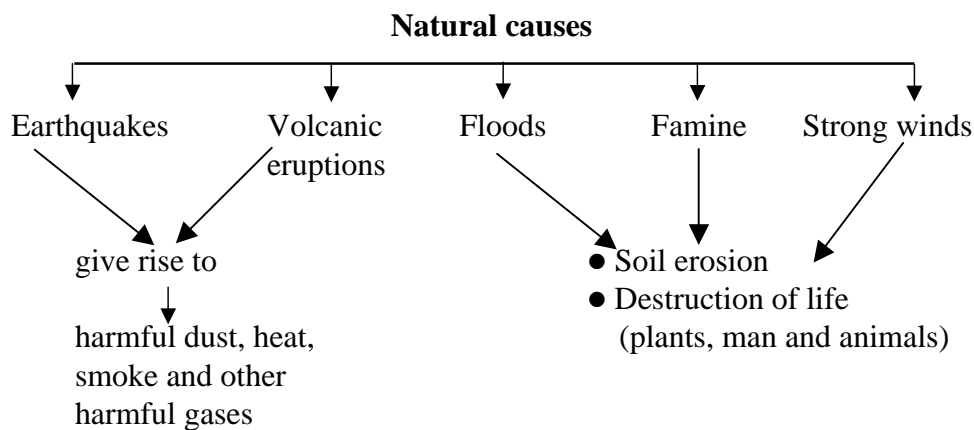
loud music have led to air degradation. All these together, contribute to environmental degradation.



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15.2.5 Natural Causes

Sometimes nature also leads to environmental degradation. Earthquakes and volcanic eruptions give rise to harmful dust, heat, smoke and other harmful gases. Floods, famines and strong winds lead to soil erosion and destruction of life among human beings, animals and plants. In this manner land, air and water are all affected negatively leading to environmental degradation.



INTEXT QUESTIONS 15.2

- a) Fill in the blanks:
- (i) Poor agricultural practices lead to soil _____ and decreases the soil _____.
 - (ii) Earthquakes and volcanoes give rise to harmful _____, smoke, _____ and _____.
 - (iii) Overgrazing by cattle leads to _____ of soil and ultimately to _____ erosion.



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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.

- (iv) Poor personal habits like _____ and _____ can result in land degradation whereas habits like _____ lead to air degradation.
- (v) Floods, famine and strong winds are called _____ disasters.

15.3 EFFECTS OF ENVIRONMENTAL DEGRADATION

So far, you have seen how environmental 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 environmental degradation and how they affect us:

- Soil / land degradation
- Deforestation (clearing of forests)
- Degradation of air
- Degradation of water
- Slum conditions

15.3.1 Soil / land degradations

Do you know that soil is the top fertile layer of land in which plants grow? Have you ever wondered 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 micro-organisms 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. As they make the soil fertile these micro-organisms are also called the farmer’s friend.

But when we use too much of chemical fertilizers, pesticides or dump wastes from mines and industries on land, these micro-organisms get killed. Thus, eventually the fertility of soil is affected, as the micro-organisms are not available to decompose the dead plants and animals.

Do you know that sprays like pesticides also penetrate plants, fruits and vegetables and is passed on to men and animals when consumed. It causes deadly diseases 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 to Section 15.2.3)

‘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.

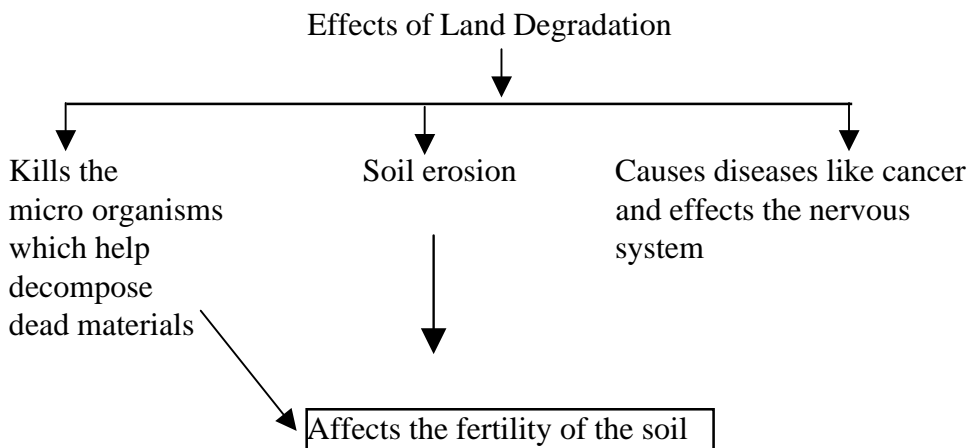


Activity 15.1: Take two boxes and fill them up with soil. Tilt them at an angle. Sow grass in one and leave the other one bare. Water them and collect the water which runs off the bottom of slopes. Note the colour of the water. Calculate the amount of soil (when water dries up). You will notice that 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 to bind the soil and prevent soil erosion.



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In short,



15.3.2 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 plants check soil erosion. In addition, forest are also responsible for recharging our natural sources of water like springs, lakes and rivers. 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
- soil erosion

All this leads to raising the level of the sea beds, and the land available to us is reduced.

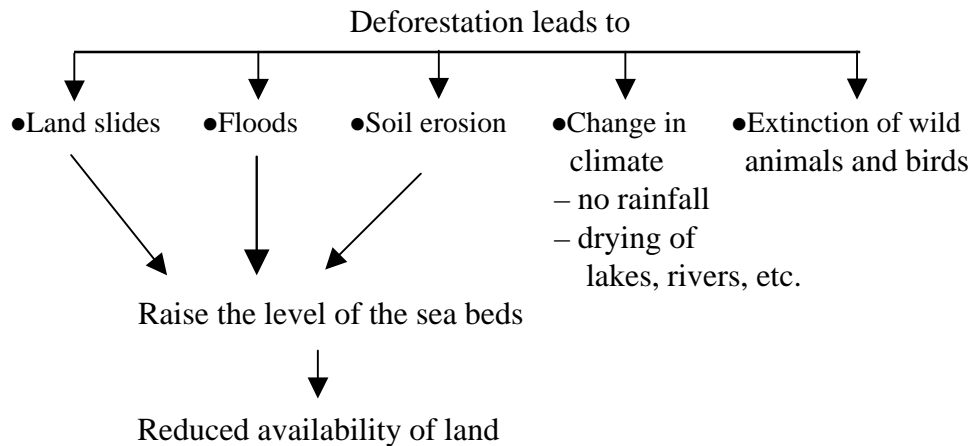
Where there are no forests, there is no rainfall, which affects the climate and ultimately leads to drying of springs, lakes and rivers. You must have seen or heard elders talking about springs which existed once upon a time. Now



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all you can see is either land or marks of water on the stones. Wild animals and birds are the worst affected as they die and may become extinct. Can you see any difference in the flow of water in a local river in last 2-3 years?

In short,



15.3.3 Degradation of Air

You can see the effects of air degradation in the following ways:

- Acid rain
- Depletion of ozone layer
- Global warming
- Man-made disasters
- Diseases
- **Acid Rain**

Smoke from vehicles and industries gives 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 dangerous and affects all kinds of plants, fishes and animals. It even affects the buildings and monuments. Erosion and discolouration of the white marble used in the construction of the Taj Mahal is one such example.

- **Depletion of Ozone Layer**

Do you remember what is ozone layer? Refer to section 15.2.2

Yes, ozone layer protects the earth from overexposure to the harmful ultraviolet rays of the sun. This ozone layer gets destroyed by harmful gases used in refrigerators and fire extinguishers. Overexposure to ul-



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traviolet rays can cause skin cancer and eye problems like cataract and blindness. It also results in stunted growth of plants.

- **Global Warming**

There are naturally occurring gases in the atmosphere which can absorb radiations of the sun. These 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 CO₂, 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 results 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 the earth’s temperature! These are the results of global warming!

- **Man-Made Disasters**

Time and again, man has caused massive environmental 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 were killed when a nuclear bomb was dropped on Hiroshima and Nagasaki 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 an infinite number of aquatic fishes and animals and the smoke polluted the air for months.

Industrial leakage has also been responsible for many deaths. We, the people of India, can not forget the Bhopal gas tragedy. 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.



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In yet another incident, thousands of people from Chernobyl town in Russia had to be evacuated because of radioactive leakage. 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.



Food Chain

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

Water plants take in CO₂ (expired by water animals) in presence of sunlight and release O₂ (dissolved) which is taken in by animals but foam and froth do not let sunlight pass through them. Thus it cuts out the O₂ supply.

● **Diseases**

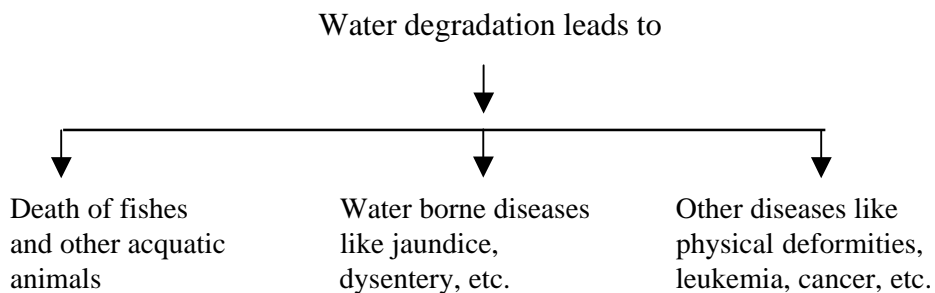
All the above factors are responsible for most of our respiratory diseases like cough and colds, bronchitis, asthma, lung cancer and also irritations like itching of the skin and watering of the eyes. People from heavily populated and polluted cities like Delhi and Kolkata are more prone to these diseases. As we take a step forward and begin to take precautions against the disease caused by degradation of environment it is also important that we take precautions against transmission of HIV, AIDS and STDs. This can be easily accomplished by practising safe sex and insisted use of condoms.

15.3.4 Water Degradation

Have you observed that the water in rivers, lakes and canals is not 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. Waste from sewage is 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.

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15.3.5 Slum Conditions

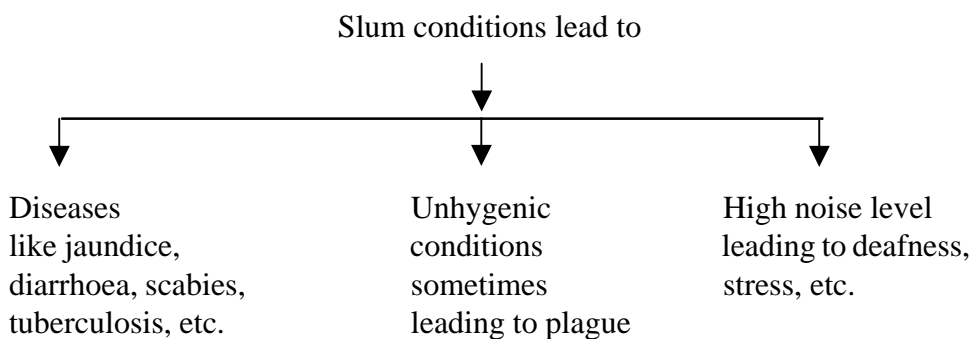
People from rural areas migrate to cities and towns in thousands in search of employment. But where do they live? Yes, they make temporary mud or tin huts with roofs of plastic sheets. Many people live inside these huts with few or no facilities of water, electricity, sanitation, etc.

A cluster of such huts together is called a slum. Have you ever 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 overcrowding 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, mosquitoes, etc. Worst of all, all around these slums, within half a kilometre, there are signs of open air defecation. 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 plague, the recent Surat epidemic which scared all the people of the country and took so many lives? Improper garbage disposal was the reason. Household pests and rodents like 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 can lead to permanent deafness, increase in blood pressure, stress, anxiety and nervous breakdown.

In short,



Activity 15.2: Visit a slum / industrial unit and observe and record their environmental conditions.



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INTEXT QUESTIONS 15.3

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

Column A

Column B

- | | |
|--------------------------|--------------------------------------|
| (a) Trees | (i) global warming. |
| (b) Chemical fertilizers | (ii) change in temperatures. |
| (c) Deforestation | (iii) deplete soil fertility. |
| (d) Refrigeration gases | (iv) lead to land slides and floods. |
| | (v) prevent soil erosion. |

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

- (a) _____ (ozone layer / acid rain / heat of sun) is responsible for destruction of life and erosion of buildings.
- (b) Depletion of ozone layer can lead to _____ (skin cancer / anaemia/respiratory disease) and problems of _____ (bones/liver/eyes)
- (c) Global warming has resulted in increase in _____ (winds/temperature / rain fall)
- (d) 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.
- (f) Two diseases which occur due to improper sewage disposal in the water are _____ and _____. (jaundice, tuberculosis, malaria, typhoid)
- (g) Two diseases which occur due to chemical wastes of industries are _____ and _____. (leukemia,allergy, malaria, asthma)

15.4 A 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. We address such products and practices as ‘*eco friendly*’. Another term used for eco-friendly is bio-friendly.

The word ‘eco’ is derived from the word ‘ecology’ which is concerned with

the relationship between plants, animals, man and environment. By eco-friendly products and practices, we mean those products and practices which are not harmful to the environmental.

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

- production,
- use, and
- disposal

Production: If the manufacturer follows all the safety and preventive measures during production and takes care of waste products, like treating the sewage and industrial wastes before letting them in the water or air then such products are called 'eco-friendly'.

Use: If the product does not harm the environment by giving out poisonous gases or wastes while using, it is eco-friendly. For example, lead in petrol is very harmful but if it is removed from petrol, the petrol becomes 'eco-friendly'.

Disposal: The packaging and leftovers of a product should be such that they are either biodegradable or can be recycled. For example, polythenes cannot decompose and thus become a nuisance as they choke the drains. 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 environmental and increase its degradation are called non eco-friendly products.

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

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

Ministry of Environment and Forests has launched an 'Eco Mark' since February 1991. It contains an ISI mark along with an earthen pot which symbolises



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Biodegradable:

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

Recycled:

Which can be reused to make a new product, e.g. paper can be reused to make board boxes or inferior quality paper.



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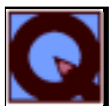
biodegradability and closeness to the environment. This mark is given by Bureau of Indian Standards (BIS). Eco mark is given to certify that a product fulfills a minimum pollution control standard and achieves high environment friendliness in production, packaging and waste disposal.



Fig. 15.2: Eco mark

Eco-friendly practices can also be adopted instead of non eco-friendly practices. Some of them are listed below:

Non eco-friendly practices	Eco-friendly practices
1. Throwing household garbage on streets or down the hill (in case of hills)	(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 source of diseases, but are also selling this manure and earning.
2. Dumping domestic wastes on streets	Planned recycling can be made profitable. For example domestic waste can be recycled- paper and textiles for paper making; metals and glass for remelting for further use, plastics for production of inferior grade plastics.
3. Dumping industrial wastes on land and in water	Setting up sewage treatment plants near the industries and introducing pollution control measures in industries.
4. Emitting industrial gases in the air	Separating pollutants from harmful gases and making them harmless before releasing them in the air.
5. Defecating in the open	Constructing 'Sulabh Shauchalayas', especially near the slums.
6. Deforestation (clearing forests)	Planting trees (afforestation) on a massive scale.



INTEXT QUESTIONS 15.4



Notes

1. Choose the most appropriate answer:
 - (i) Eco-friendly products mean things which are
 - a. very harmful to the environment
 - b. less harmful to the environment
 - c. not harmful to the environment
 - d. not very harmful to the environment
 - (ii) Eco-friendly products are given
 - a. FPO mark
 - b. AGMARK
 - c. ISI mark
 - d. ECO mark
 - (iii) Products are termed eco-friendly on the basis of their
 - a. production, use and disposal
 - b. disposal, recycling and dumping
 - c. production, distributing and recycling
 - d. 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, nylon sari, unleaded petrol, solar cooker, earthen cups, crude motor oil, paper bag, canvas.

3. Match list A with list B and follow the pattern given in the example below.

<i>List A</i>	<i>List B</i>
e.g.: Deforestation	Aforestation
(a) defecating in open	(i) pollutants separated before letting out
(b) household wastes	(ii) recycling for industrial use
(c) industrial gases	(iii) Sulabh Shauchalaya
(d) industrial wastes	(iv) manure for garden
(e) municipal wastes	(v) sewage treatment plants
	(vi) land treatment plants

15.5 HOW CAN WE HELP IN ENVIRONMENTAL CONSERVATION

- a) At home
 - Adopt the principle of "3 R's" Reduce (consumption) Re-use (articles) and Recycle (wastes).



Notes

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

Sanitary refill: After reducing to smallest volume, Municipal wastes are dumped in an enclosed area outside the city. The refuse is covered with soil for decomposition. This is called sanitary refill.

- use solar cookers and solar heaters as far as possible
- maintain sanitary conditions and adopt hygienic habits like no spitting or defecating in the open.
- ensure proper disposal of refuse, human excreta, etc.
- adopt family planning norms and keep the family small
- save water for the future. Use minimum water for all activities and avoid wastage
- avoid loud speakers to celebrate
- avoid smoking.

b) While going out

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

c) Be close to nature

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

15.6 THE ROLE OF GOVERNMENT IN CONTROLLING ENVIRONMENTAL DEGRADATION

Man has now become conscious of long-term effects of environmental degradation. Government plays an important role in controlling the degradation of the environment. Some of the significant measures taken by the government are to:

- ensure that all industries are located far away from cities
- enforce strict laws for pollution control in industries as well as vehicles
- ensure that all industries set up waste treatment plants
- encourage the industries to link and reuse the wastes of each other, wherever possible, for example steel mills can use worn out parts of automobile industry
- insist on people adopting family planning norms
- provide efficient waste disposal systems for domestic wastes
- educate the public on the causes and effects of environmental degradation.

- motivate the people to use biogas, solar cooker, solar heater, etc.
- ensure healthy farm practices like using natural manures, crop rotation, mixed cropping, etc.
- motivate people to grow trees and care for them,
- conserve wild life by maintaining the forest reserves.



Activity 15.3: 1. Visit the local scrap-dealer's (Kabadi wala) shop. Find out where and how the following are disposed:

- (i) Old newspapers and magazines
 - (ii) Metal and plastic items, and
 - (iii) Glass bottles.
2. Sort out your household waste as biodegradable and non biodegradable. Use the biodegradable wastes for making manure.



INTEXT QUESTIONS 15.5

- 1.. Correct the following statements and give reasons.
- (i) It does not matter if people have large families.
.....
.....
 - (ii) All members of society should not be involved in environmental management programmes.
.....
.....
 - (iii) Household waste disposal is not important because final disposal of garbage will be done properly.
.....
.....
 - (iv) Waste lands cannot be cultivated for agriculture.
.....
.....
 - (v) Healthy farming practices include overcropping and use of chemical fertilizers.
.....
.....



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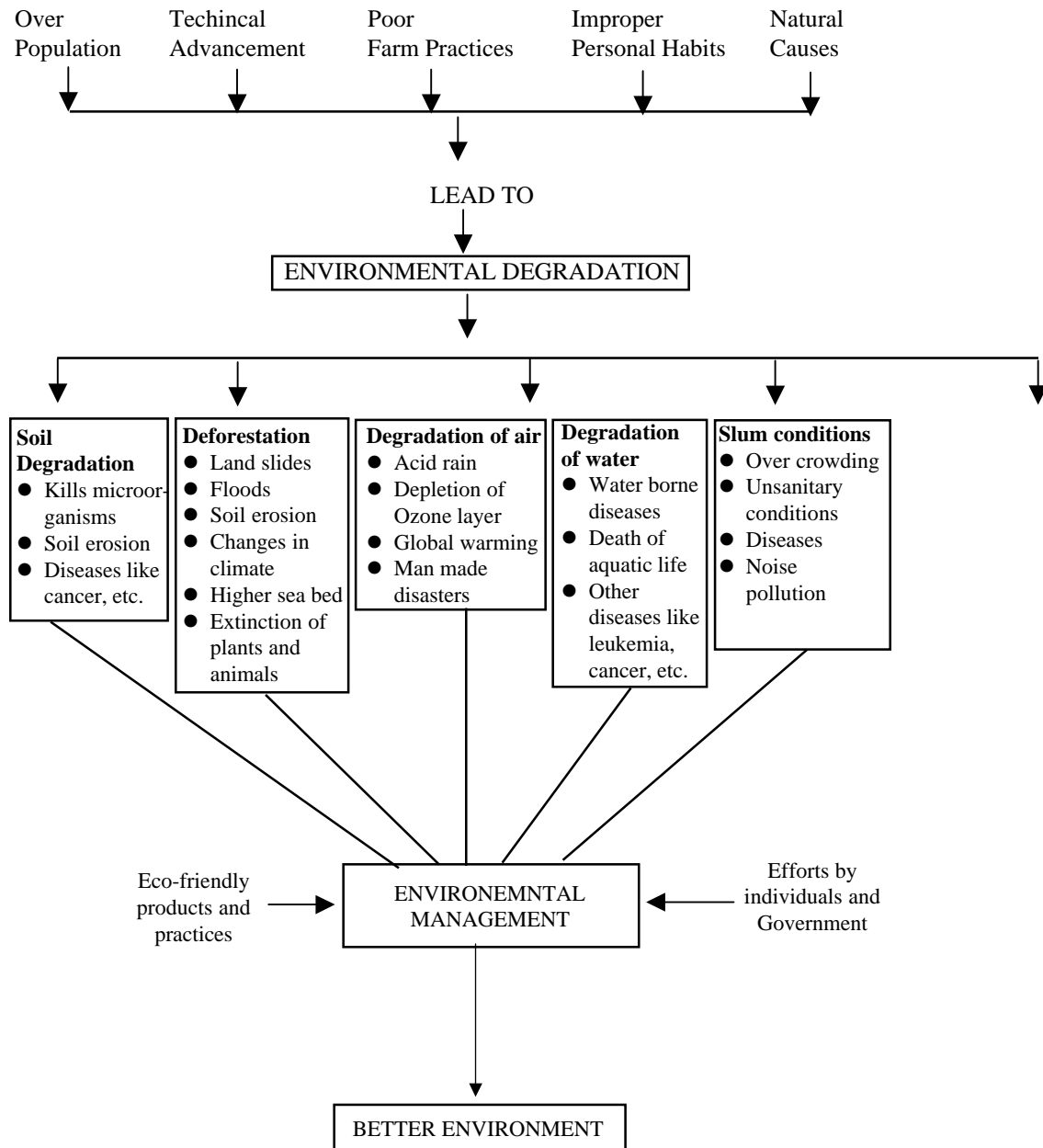


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4. Rearrange the letters to indicate the correct terms for the following
- i. Avoid cutting trees NTOSIFEARTED
 - ii. Pollutes the air ISGOMKN
 - iii. Melting of glass and metal for re-use GCEIRCYLN
 - iv. Eco friendly fuel for cooking SGAOIB
 - v. Recycling of household waste EAMUNR



WHAT YOU HAVE LEARNT





TERMINAL EXERCISE

1. Define environmental degradation with two suitable examples from your day-to-day life.
2. What do you understand by the term 'eco-friendly'? List four examples each of eco-friendly products and eco-friendly practices.
3. Explain how forests help in conserving the environment. Analyse the effects of deforestation.
4. How does technical advancement lead to environmental degradation?
5. Briefly explain the effects of overpopulation on our environment.
6. Discuss the following effects of air degradation.
(a) acid rain (b) global warming (c) depletion of ozone layer.
7. Present your plan to conserve your environment.
8. Compare the living conditions of a person living in a city with that of a person living in a village.



Notes



ANSWERS TO INTEXT QUESTIONS

- 15.1** 1. (i) c, (ii) d
2. (a) iv (b) vi (c) vii (d) vi (e) iii (f) viii
- 15.2** (a) (i) erosion, fertility.
(ii) dust, heat, harmful gases
(iii) hardening of soil, soil
(iv) spitting, defecating in open, smoking,
(v) natural
- 15.3** 1. (a) (v) (b) (iii) (c) (iv) (d) (i)
2. (a) acid rain (b) skin cancer and eyes (c) temperature
(d) respiratory, asthma, bronchitis (e) handicapped
(f) jaundice, malaria (any two)
(g) leukemia, allergy
- 15.4** 1. (a) (iii) (b) (iv) (c) (i)



2. eco-friendly

- water based paints
- jute
- earthen cups
- paper bags
- canvas

non eco-friendly

- polythene bags
- nylon sari
- crude motor oil

3. (a) (iii) (b) (iv) (c) (i) (d) (v) (e) (ii)

15.5

1. (i) People should have **small** families. Large families lead to many problems.
- (ii) Poorest members **should be** involved in environmental management programmes.
- (iii) Household waste should be properly disposed. Otherwise it leads to environmental degradation.
- (iv) Waste lands can be cultivated for agriculture.
- (v) Healthy farm practices include mixed cropping and use of natural manures.

For giving reasons, refer text.

2. (i) Deforestation (ii) Smoking (iii) Recycling
(iv) Biogas (v) Manure.
3. a) (iii), b) (iv), c) (v), d) (v), e) (ii)

AUDIO - Vayu Pradushan

VIDEO - Man and Environment

*For more information log on to
<http://www.cleanindia.org>*