

MODULE 33 - ROLE OF AN INDIVIDUAL IN PREVENTION OF POLLUTION

OBJECTIVES

By the end of the session students will be able to know their role in:

1. Controlling Air-pollution.
2. Reducing Water pollution.
3. Mitigating soil-pollution.
4. Preventing Noise-pollution.
5. Minimizing Global Warming.
6. Conserving Ozone-layer.

SUMMARY

The credit for Environmental pollution is mostly given to Industrialization, Transportation and modern agriculture, but many of our routine daily activities also contribute in Environmental pollution. These activities are widely spread and at a time pollute the environment at such a low level that effect is not marked easily and hence attention is not paid. Improper use of paper, electricity and wood, smoking, not maintaining the vehicles properly not paying proper attention during driving are some of the examples of our activities that damages The Environment. Hence the role of individual in prevention of pollution is possible if attention is given properly.

TRANSCRIPTION

Introduction

At present when Human society is highly consumerist, the prevention of pollution is a great challenge. Consumerism promotes over use or excess use of things to provide comfort and glamorized life.

Over use of the things directly or indirectly destroys or reduces the natural resources and results in the rise of pollution and upsets nature's balance

Knowingly or unknowingly many of our routine activities are responsible for pollution. Use of chemicals at home, smoking, watching T.V. programs to the accompaniment of high volume, results in Water, Air and Noise pollution

respectively. Hence the role of an individual is very important in controlling pollution.

At present our country has about 60 crores youth and if each youth saves a sheet of paper and one unit of electricity every day, then it would result in conserving 60 crore paper sheets and electric units in a day.

Role of individual in controlling air pollution

The problem of Air pollution is most severe among all types of pollution, because human beings inhale about 20-22 kg air in 24 hours. This amount is greater than water taken in 24 hours or the food that is eaten. Air pollution probably started when man discovered fire. At present air is being continuously polluted by automobiles, industries, thermal power plants, atomic work and modern agricultural practices. It is estimated that on an average vehicles are responsible for about 55% Air pollution. Contribution from other sources are Power plants 17%, Industries 15%, Agricultural practices 07% and other activities 04% only. Increasing Human population and decreasing forest cover are making the problem more acute. Air pollution is creating an imbalance in the quality of air and thus adversely affects living organisms. Efforts are being made at all levels to control Air pollution. There are several rules, regulations and acts regarding Industries, Auto vehicles and Atomic work to check air pollution.

Many of the individual efforts if followed properly, can reduce the problem to a great extent. Youth use motor bikes and other auto-vehicles to go to school, college and coaching classes. Auto-exhaust is mostly responsible for Air pollution. Driving at a steady speed, proper maintenance of vehicles, maintaining proper air pressure in tyres and the use of good quality fuel and oil - can reduce Air pollution. Use of Bicycles and public transport and walking short distances can also help a lot in reducing air pollution.

Burning garbage in open places creates a lot of Air pollution. Instead of burning the garbage, bio-degradable waste should be separated from non-degradable waste. Bio-degradable matter can be used in preparing compost and vermin-compost. Therefore, non-degradable items should be handed over to the persons who reuse or recycle them.

Trees are mute sufferers of air pollution, as they absorb and accumulate large amount of air pollutants on their foliar and bark surfaces. So saving trees definitely reduces air pollution and trees indirectly can be saved by reducing the use of paper and paper products. Paper is manufactured from pulp prepared from wood obtained from trees. Using both sides of papers as well as photocopying on both sides can save a lot of paper. Reuse of envelopes and computer papers (which are blank on one side) and avoiding the use of greeting cards, paper napkins and toilet papers are also important in saving paper. Keeping books in good condition and donating them to friends is also important.

Giving up the smoking habit completely will control indoor Air Pollution and will save tree as well. Curing of Tobacco leaves used in Bidis and cigarettes need wood obtained from trees. Also, trees should be saved from being cut and burnt during the celebrations of festivals like Holi.

Individual efforts for reducing water pollution

Water is our second basic need after air. All organisms contain about 80% of water. For various activities of enzymes and hormones, water is essential. In plants, water is needed for absorption and distribution of nutrients along with growth, development, movement, reproduction and controlling temperature. Man uses water for drinking, bathing, washing, irrigating crops and for industrial work. In human body, water enters by direct drinking as well as with the food consumed. A small amount of water is formed by oxidation of food also. Urine, Stool and sweating are the ways by which water is removed from human body. In the body every molecule of water is replaced in 13 days. So pure and clean water is essential for Organisms, but at present water is being continuously polluted by urban sewage, industrial effluents and agricultural waste. By all these sources toxic, hazardous and radio-active chemicals are added to water, so that there is alteration in physical, chemical and biological properties of water which is harmful for organisms. In our country 80% of water pollution is due to urban and rural sewage. Though the Water (Prevention and Control of Pollution) Act 1974 and The Environment Protection Act-1986 exist, but still the problem of water pollution is increasing day by day.

As water is associated with many of our routine daily activities, many individual efforts can control water pollution to some extent.

Reducing water pollution is need of the hour. By avoiding or reducing the use of chemicals like detergent, toilet cleaners and insecticides water pollution can be checked. We should not immerse oil painted idols made of plaster of paris in water reservoirs. Paint on the idols contains heavy metals that pollute water. Prevention of leakages of pipes in water supply and drainage line are an important step in checking water pollution.

Water coming from many of the household activities - when mixed with already polluted water - increases the volume of polluted water. So saving of water in house hold activities indirectly reduces water pollution. Reducing the flow of tap water while brushing and shaving, and using a bucket and mug for bathing, conserve many liters of water every day. Water used for washing clothes, vegetables and utensils can be used in toilets and garden. Washing of floor and vehicles with running water wastes many liters of water so it is advisable to mop the floors and reuse water spray bottles to clean vehicles. New type of flush systems are also water conserving.

Mitigating soil pollution by some individual efforts

Soil is the upper most fertile layer of earth's crust, which supports Terrestrial plants and animals. Like air and water, soil also gets polluted. Soil pollution can be defined as the addition of substances to the soil, which adversely affects physical, chemical and biological properties of soil and reduces its productivity. Like water, soil is also polluted by sewage, Industrial discharge and waste of modern agricultural methods. The process of soil formation is very slow, therefore, soil may be considered as non renewable resource. This makes the soil pollution problem more acute. Fertile soil is not only our national heritage but is respected by us as our mother and we address the earth as "Dharti Maa" in Hindi. In Hinduism and other religions, there are many occasions and festivals when soil is worshiped. Life on earth depends directly on the living soil. Without living or fertile soil and the microbial fauna that inhabit it, food would not grow, dead things would not decay and nutrients would not be recycled. Yet the soil is being stripped away, rendered sterile and contaminated with toxic chemicals at a rate that cannot be sustained.

Use of green manures, compost and vermin-compost can reduce soil pollution. To control pests, traditional pest control methods should be applied. Use of resistant varieties of crops should be preferred. Plastic items also pollute the soil because many chemicals are released from them and reach the soil. So, plastic articles should not be thrown away carelessly.

Personal ways for preventing noise pollution

Noise pollution is a byproduct of modern civilization and it is a new enemy for human health. Crowded towns, Cities and Metro cities, mechanized means of transport, new devices of recreation and entertainment are polluting the atmosphere with their continuous noise. One may also agree that hooting of horns, blaring loudspeakers on religious and social occasions, markets and malls, rumbling machines and vehicles- all these have come to be accepted as inevitable parts of modern civilization. Noise has penetrated almost every aspect of modern life. Modern civilization creates more and more noise. Noise is considered as unwanted, unpleasant and undesired sound causing discomfort. Noise pollution is the unwanted sound dumped into the environment without regard to the adverse effect it may have. The Intensity of sound is measured by the unit of decibel. Sound of more than 85 decibel intensity is referred to as noise. Noise is so closely associated with us that we cannot imagine the long term adverse effect produced by it. Many of our routine activities generate noise but due to its effects being visible only in the long run, serious attention is not paid. By some simple efforts noise pollution can be prevented or reduced.

Unnecessary use of horns & using vehicles without silencers should be avoided. The vehicle should be serviced regularly. Adopting such simple measures can help in reducing vehicular noise pollution.

Use of TV, Radio, CD player and DVD etc. at low volume also controls noise pollution. DJs should play music at a low level on various occasions. Water pumps, Door bells, Telephones, Mixer grinders and Pressure cookers etc. should be used and maintained in such a way that they produce less noise. Trees also reduce noise pollution so trees should be preserved.

Approaches for minimizing global warming

Global warming is the result of increased green house effect. Global warming is the gradual rise in temperature on the earth's surface due to increased amount of green house gases. Most of the green house gases are released by human activities. Important green house gases are carbon dioxide, Methane and Nitrous oxide. The main culprit for global warming is Carbon dioxide which has increased in the atmosphere from 350ppm to 370ppm in the last 50 years. Carbon dioxide is transparent in sunlight but not to heat radiations, so carbon dioxide traps and reemits heat, causing warming of atmosphere. Industries, Automobiles, thermal power stations, Forest fires & Burning of firewood are the main sources releasing carbon dioxide in the atmosphere.

Global warming will cause rise in temperature, and rise in temperature will result in melting of glaciers. Melting glaciers will raise the sea level and whole coastal area will be adversely affected. It is also estimated that agricultural production will be reduced and deserts will increase. Migration of flora and fauna will occur and due to this many species may disappear. Wind velocity and rainfall pattern will also change. So global warming is very dangerous and it is a global warning to save the earth.

Global warming is global environmental problem so at international levels efforts are being made to reduce the emission of Carbon dioxide, but we can also adopt some simple efforts to reduce global warming. Use of Bicycle and Public transport, reducing the use of paper and wood and preserving trees are few simple steps in reducing global warming. Many of our small efforts for saving electricity, like switching off fans and light when not required, keeping the bulbs, tube lights and fridge-coil dust free, use of Compact fluorescent lamp (CFL) and Light emitting diode (LED) bulbs, can minimize the problem. We should also avoid keeping TV, PC and other electronic equipment on stand-by mode to minimize this problem.

Personal efforts for ozone

The Ozone layer is present at the height of 20-25 K.M. in the atmosphere, and provides protection to the organisms against the harmful effects of ultraviolet rays. It is also referred to as protective blue umbrella. Ozone is a highly reactive pale blue gas with penetrating chlorine like odors. In atmosphere the existence of ozone is the result of a balance between amount of ozone formed and destroyed. Both the processes of ozone-formation and destruction of ozone occur naturally with the help of UV Rays. Ozone concentration in the atmosphere is the highest during February to April and lowest from July to October.

Reduction in the concentration, or amount of ozone, was first reported over Antarctica by Formann in the year 1985. Important ozone depleting substances are chlorofluoro carbons, Halons, carbon-tetrachloride, Methyl chloroform, hydro-bromo-fluorocarbons, hydrochloro fluorocarbons and Methyl- bromide. Among these substances chloro-fluoro-carbons are found to be most dangerous for ozone. Chlorofluorocarbons are used in refrigerators, air conditioners and foam industries.

Reduction in the amount of ozone will increase sun burn, skin cancer, snow blindness and cataracts by adversely affecting the immune system in human beings. Depletion in ozone can also decrease yield of some vegetables like Peas, Beans & cabbages. Phytoplankton, zooplankton, larva of animals and young fishes are found to be adversely affected by UV-Rays.

The Montreal Protocol was a foundation stone of international efforts for saving the ozone. Here 46 countries participated and all agreed to reduce the use of chlorofluorocarbons. At personal level avoiding or reducing the use of items having CFCs like hair spray, room fresheners and perfumes can help in ozone protection. Growing plants around the house and painting the terrace, lowers the temperature and reduces the demand for air conditioning.

Conclusion

Thus, through this programme, we have brought to you the adverse effects of air, water, soil and noise pollution – and also the damage to the environment, eco-system and human physiology that is being caused due to the destruction of the ozone layers. As we have seen, all this can be significantly reduced – if not totally eliminated – by some small efforts which all of us can take individually. While it would appear to be insignificant at a personal level, the magnitude of its united effect would be very large and lasting – helping to make this world a cleaner, healthier and better place to live in for us and for the future generations.

GLOSSARY

1. Air-Pollution : Contamination of atmosphere by various gases and particles in such concentration that becomes harmful for Organisms.
2. Indoor Air-pollution : Contamination of Air inside the home.
3. Vehicular-pollution : Pollution caused by Autovehicles.
4. Foliar surface : Leaf surface.
5. Bark : A layer of dead tissue present over the stem and branches of Trees.
6. Water-pollution : Change in Physical, Chemical and Biological characters of water, So that it became unsuitable for organisms.
7. Industrial effluent : Waste from the industry.
8. Sewage : Liquid Urban waste with water surfaces.
9. Pesticides : Substances used to kill pest.
10. Insecticide : Substances used to kill Insect.
11. Noise –pollution : Unwanted sound dumped in Environmental.
12. Soil – Pollution : Contamination of soil by various waste matters.
13. Garbage : Simply it is House hold waste.
14. Compost : Manure produced by soil- micro organisms from degradable matter.
15. Vermicompost : Manure produced with the help of Earthworm from degradable matter.
16. Global warming : Gradual Warming of the earth's atmosphere.

17. Climate change : Significant change from on climatic condition to other.
18. Ozone depletion : Reduction or decrease in atmospheric Ozone.
19. Clorofluorocarbons : Chemicals used in refrigeration, air conditioning, packing and insulation work.
20. Biodegradable : Matter decomposed by organisms.
21. Curing : Gradual drying of leaves (Tobacco & Tea) under controlled condition to maintain quality.

FAQ's

Q.1 What is Noise pollution?

Ans. Increases of Unwanted, undesirable and useless sound in the atmosphere at such concentration that it causes harms to Man and Others.

Q.2 What is Organic farming?

Ans. It is cultivation with help of natural manure but not with the use of chemicals like chemical fertilizers & pesticides.

Q. 3 What is Global Warming?

Ans. This is the phenomenon by which earths temp. is rising gradually due to increasing amount of Green houses gases like Carbon dioxide and Methane etc.

Q.4 What is Ozone depletion?

Ans. It is reduction in amount of Atmospheric Ozone mostly by Chlorofluorocarbons.

Q.5 What is the role of Ozone?

Ans. It is giving protection to organisms against Ultraviolet rays.

Q.6 What is Air-pollution?

Ans. Presence of materials in air in such a concentration which are harmful to Organism & Environment is Air pollution.

Q.7 What is Water -pollution?

Ans. It is the addition of some substances (Organic, inorganic, biological or radiological) or factor (Heat) which degrade The Quality of water so That it either becomes health Hazard or unfit for use.

Q.8 What is Soil- pollution?

Ans. Soil pollution is addition of substances to the soil, which adverse effect physical, chemical and biological properties of soil and reduces its fertility.

Q.9 What is Chlorofluorocarbon?

Ans. It is a type of Chemical that is used as refrigerant or aerosol propellant. When it breaks in the atmosphere and releases chlorine atom that destroy ozone.

Q.10 What is Indoor Air-pollution?

Ans. This is the pollution of air inside the home by various activities Line fuel burning, use of chemicals and smoking etc.

CASE STUDY

There are many Studies and reports indicating That Saving of papers results in Conserving Trees. Study report of a NGO named "Vatavaran suggest that school children's in Delhi if same single paper sheet every day the in a year 40000 trees can be conserved. There are more Than 20 Lac school children in Delhi. Similarly a study conducted by central ministry of Environment in 2004 reveals that if 10 crore of people in our country do not use greeting cards in a year at Various occasions The 30 Lac Trees Can be saved. Similarly publishing of Sunday edition of New York Times (News paper) on recycled paper can save 75000 Trees. Few years back Rebo- bank of Netherland decided not to send x-mas greeting Cards to customers and this resulted in saving 170 Trees.