

ASSIGNMENT NO.5

TOPIC 5: ENVIRONMENTAL POLLUTION

- Procedure and methods of controlling all four types of pollution.

What is air pollution?

Air pollution occurs due to the presence of undesirable solid or gaseous particles in the air in quantities that are harmful to human health and the environment. Air may get polluted by natural causes such as volcanoes, which release ash, dust, sulphur and other gases, or by forest fires that are occasionally naturally caused by lightning.

Air pollution can be controlled by two fundamental approaches: preventive techniques and effluent control. One of the effective means of controlling air pollution is to have proper equipment in place. This includes devices for removal of pollutants from the flue gases through scrubbers, closed collection recovery systems through which it is possible to collect the pollutants before they escape, use of dry and wet collectors, filters, electrostatic precipitators, etc. Providing a greater height to the stacks can help in facilitating the discharge of pollutants as far away from the ground as possible. Industries should be located in places so as to minimize the effects of pollution after considering the topography and the wind directions. Substitution of raw material that causes more pollution with those that cause less pollution can be done.

Water pollution:

When the quality or composition of water changes directly or indirectly as a result of man's activities such that it becomes unfit for any purpose it is said to be polluted. Although 71% of the earth's surface is covered by water only a tiny fraction of this water is available to us as fresh water. About 97% of the total water available on earth is found in oceans and is too salty for drinking or irrigation. The remaining 3% is fresh water. Of this 2.997% is locked in ice caps or glaciers. Thus only 0.003% of the earth's total volume of water is easily available to us as soil moisture, groundwater, water vapour and water in lakes, streams, rivers and wetlands.

Causes of water pollution:

There are several classes of common water pollutants. These are disease-causing agents (pathogens) which include bacteria, viruses, protozoa and parasitic worms that enter water from domestic sewage and untreated human and animal wastes.

Control of pollution: While the foremost necessity is prevention, setting up effluent treatment plants and treating waste through these can reduce the

pollution load in the recipient water. The treated effluent can be reused for either gardening or cooling purposes wherever possible. A few years ago a new technology called the Root Zone Process has been developed by Thermax. This system involves running contaminated water through the root zones of specially designed reed beds. The reeds, which are essentially wetland plants have the capacity to absorb oxygen from the surrounding air through their stomatal openings. The oxygen is pushed through the porous stem of the reeds into the hollow roots where it enters the root zone and creates conditions suitable for the growth of numerous bacteria and fungi. These micro-organisms oxidize impurities in the wastewaters, so that the water which finally comes out is clean.

Soil Pollution: We can no more manufacture a soil with a tank of chemicals than we can invent a rain forest or produce a single bird. We may enhance the soil by helping its processes along, but we can never recreate what we destroy. The soil is a resource for which there is no substitute. (Environmental historian Donald Worster reminds us that fertilizers are not a substitute for fertile soil).

Causes of soil degradation

Erosion

Soil erosion can be defined as the movement of surface litter and topsoil from one place to another. While erosion is a natural process often caused by wind and flowing water it is greatly accelerated by human activities such as farming, construction, overgrazing by livestock, burning of grass cover and deforestation.

Control: There are several techniques that can protect soil from erosion. Today both water and soil are conserved through integrated treatment methods. Some of the most commonly employed methods include the two types of treatment that are generally used.

- ✓ Area treatment which involves treating the land
- ✓ Drainage line treatment which involves treating the natural water courses (nalas)

Noise pollution:

Noise may not seem as harmful as the contamination of air or water but it is a pollution problem that affects human health and can contribute to a general deterioration of environmental quality. Noise is undesirable and unwanted sound. Not all sound is noise. What may be considered as music to one person may be noise to another. It is not a substance that can accumulate in the environment like most other pollutants. Sound is measured in a unit called the 'Decibel'.

Noise Control techniques:

There are four fundamental ways in which noise can be controlled: Reduce noise at the source, block the path of noise, increase the path length and protect the recipient. In general, the best control method is to reduce noise levels at the source. Source reduction can be done by effectively muffling vehicles and machinery to reduce the noise. In industries noise reduction can be done by using rigid sealed enclosures around machinery lined with acoustic absorbing material.

- Essay on "How to minimize the effects of pollution".

It is more profitable to prevent pollution rather than deal with it after it has spread. To stop pollution before it is caused is the best course. Hence continuous modernization is equipment of environment management is also important.

Where there is awareness among the people, the pressure on the government to control pollution is more. Even here, it is difficult to change the situation overnight. In order to address the problem before it arises, adoption of preventive measures is required. Whenever a developmental project is taken up, the proposed pollution control measures need to be incorporated into the environment impact assessment reports. Any developmental activity is bound to cause some damage to the environment. So the public must be informed about it before the work is taken up. The developmental projects must be strictly implemented as per the agreed environmental management terms. Under the environment Act, the state and central governments have developed an implementation mechanism with the help of the state and central pollution control Boards and the forest Department. The salient points to tackle environmental pollution at the community level are as follows-

- 1) from early childhood, children need to be taught about public health and sanitation, about citizens' right and duties towards natural resources. They should be encouraged to participate in activities addressing these issues.
- 2) The people in an area must learn to measure and estimate the amount of pollution in the surroundings, and at their own expense. Only then will determination and dedication to preserve the environment will arise. For this must be trained and helped the local pollution control board officials.

- 3) Every department of the government that supervises activities, which are likely to affect the environment and public health, should collect details on the effect of their activities on the public health, the environmental conditions, and the effects of pollution on various life forms. The departmental role in improving the environment must be clearly specified in every sector. Based on these details, the departments should develop and implement programs.
- 4) Where pollution is severe, the authorities should conduct continuous inspections, move out polluting industries or encourage them to modernize with latest technology. The region between industries and residential areas should be covered with thick green belt.
- 5) To prevent migration from villages to cities, small cities and towns should be developed with clear foresight and commitment. Healthy living conditions need to be provided in the villages protecting the lakes, trees and pastures. Zoning and town planning regulations pertaining to residential, commercial and industrial areas need to be made and the restrictions must be strictly enforced.
- 6) In cities and villages, solid waste is being thrown into the lakes. This mixes with the water and pollutes it. That is why waste needs to be separated into dry and wet wastes. The wet waste needs to be composted for agricultural use.
- 7) Domestic waste should be kept separate from hospital and industrial wastes.
- 8) The wet waste from the cities should be turned into compost and must be returned to the farms through agricultural markets, Rythu bazaars and with the help of market committees.
- 9) Environmental protection is a joint effort. That is why universities, scientific institutions, governmental organizations, and colleges need to work together. They should test the purity of air, water and land in their areas. Special attention should be paid to biodiversity in the area.
- 10) Knowledge on biodiversity should be acquired and steps should be taken to protect it.
- 11) Near catchments of the rivers and hill slopes, trees need to be planted on watershed areas to promote greenery. They need to use groundwater and surface water carefully.