

CHAPTER EIGHTEEN

ENVIRONMENTAL POLLUTION AND NATURAL RESOURCES

Environmental Pollution:

This occurs when poisonous substances are released into the environment in harmful quantities. These items which cause pollution of the environment are called pollutants and there are two types. These are:

- 1) Biodegradable pollutants.
- 2) Non- biodegradable pollutions

Biodegraduate pollutants:

These are those pollutants which can be rendered harmless by natural processes. If they are well treated or disposed of, they cause no permanent harm and sewage is an example of such a pollutant.

Non- biodegradable pollutants:

These are these items which eventually accumulate in the environment, and may end up being concentrated in the food chain eg. lead and DDT.

Types of pollution;

These are;

- i) Water pollution.
- ii) Air pollution.
- iii) Land pollution.
- iv) Noise pollution.

Water pollution:

This occurs when items such as domestic and industrial waste are dumped into water bodies in harmful qualities. The pollutants which affect water come mainly from industries, farms and

sewage systems. Industries dump its water body's huge amount of waste products such as chemicals, animal and plant waste as well as hundreds of other substances. Waste from farms includes animal waste, fertilizers and pesticides.

Sewage systems carry waste from our homes industries and offices into water bodies. Another form of water pollution which is called thermal pollution occurs, when hot water from factories and power plants (which have been used for cooling purposes) are dumped into water bodies. This hot water may kill those plants and animals which are accustomed to living at low temperature.

Some water pollutants and their effects:

1) Fertilizers:

Fertilizers placed on the land may be drawn into water bodies and promote the growth of algae. These algae may grow so well that they may cover the entire water surface, cutting off light for the plants below, which causes their death.

The decomposition of these dead plants (algae) is made by certain bacteria, which make the use of the dissolved oxygen in the water. There is therefore a lack of oxygen within the water bodies, causing the death of fishes and other aquatic animals.

Also if too much fertilizer in the form of nitrate dissolves in a water body, then this may lead to diseases in babies who are made to drink such a water.

2) Sewage (ie untreated sewage):

Certain cities and towns have sewage or waste treatment plants, where some of the most harmful wastes are removed from the sewage before being dumped into water bodies. But despite that, most of the treated sewage contains harmful bacteria which can harm water bodies.

Most towns and villages in Ghana have no sewage treatment plants and so their sewage goes straight into water bodies.

These untreated sewages contain bacteria which can cause death in both man and animals. It therefore becomes very dangerous to drink or swim in such water bodies, and aquatic life may eventually perish from lack of oxygen ie oxygen starvation.

3) Detergents: Until the development of biodegradable detergents, ordinary detergents caused foam in water bodies. Apart from spoiling the looks of rivers, this foam causes the death of fish and other aquatic life.

4) Heat:

Factories and power plants use river water or water for cooling purposes. If this hot water is dumped into water bodies such as the river, it kills the fishes within them, since most fishes cannot survive when the surrounding temperature exceeds 30°C.

5)Oil Spillage:

This can be caused by leaking or sinking oil tankers or ships or when tankers run aground or collide with other ships. The oil may get into the sea, where it may kill sea birds by poisoning them or by clogging up their wings, so that they cannot fly to look for food. If the oil gets washed ashore, it can destroy all forms of life on rocks, in mud and on beaches.

6) Factory waste::

Certain waste from factories such as mercury and its compounds are dumped into water bodies. Even though these substances do not kill the fishes or aquatic life, they are stored into the bodies of these creatures and finally get into the bodies of man after eating these creatures. This may poison them. Lead can leak out from factories that make car batteries into water bodies.

Also radioactive waste can leak from nuclear waste processing plants or nuclear power stations and cause pollution of water bodies.

Control of water pollution:

- (1) Waste from industries must not be dumped into water bodies.
- (2) Hot water from factories must be cooled before being dumped into water bodies.
- (3) Excess amount of insecticides, pesticides and fertilizers must not be used.
- (4) Sewage must first be treated before they are dumped into water bodies.

Some effects of water pollution:

- (1) Polluted water may cause disease.
- (2) It may also cause the death of the aquatic creatures living within such water bodies.

- (3) Some water pollutants enter into the bodies of aquatic creatures such as fishes, and these finally get into the bodies of man, after he had eaten them.
- (4) It prevents the water from being used for activities such as swimming and drinking.

Air pollution:

This is caused when air pollutants such as gases, smoke, particulates or exhaust from automobiles are released into the air. Gases which cause air pollution are normally from industries.

Some air pollutants and their effects:

1).Carbon (II) Oxide (Carbon monoxide).

It forms part of the exhaust of automobile and is very poisonous. When it gets into the blood stream, It stops the red blood cells from carrying oxygen from the lungs to the rest of the body. Too much carbon II oxide can cause death.

2) Sulphur(IV) Oxide (Sulfur dioxide (NO₂):

It harms the respiratory system of man, animals and damages plants. It combines with hydrocarbons and sunlight to form smog which irritate the eyes of people, damages their lungs, cause headaches and injuries to plants.

Smoke:

It attacks the lungs and if it contains lead, brain damage occurs especially in child.

5) Particulates:

Examples are cement and iron dust. They cause Injuries to the respiratory system of man, reduce visibility and affect the climate.

6) Hydrocarbons:

They cause injuries to plant

Mercury:

It harms the nervous system.

NB: Both SO₂ and NO₂ attack the lungs and the breathing tubes, causing bronchitis. These gasses also dissolve in rain water to form or produce “acid rain” which damages trees, buildings metal work etc.

Control of air pollution:

- (1) By building tall factory chimneys, so as to discharge waste gases high into the atmosphere.
- (2) Laws can be passed to enforce, stop or reduce pollution causing activities.
- (3) By passing waste gases from factories and exhaust from motor vehicle through filters, to remove the pollutants they contain before being discharged into the atmosphere.
- (4) New machines which do not pollute the environment must be developed by scientists and engineers.

NB: other sources of air pollution are factories, power stations and homes that burn coal and oil.

Land (soil) pollution:

This occurs when waste products or materials such as used car tyres or plastics are left on the land. Land or soil pollution may also occur when chemicals or industrial products which are harmful to soil organisms are introduced into the soil.

Effects of land pollution:

- (1) Some of the land pollutants are absorbed by plants and this affects their growth and reduce crop yield or even kill the plant.
- (2) Some of the land pollutants are absorbed by plants and these get into the bodies of man after eating these plants, which may cause them to fall sick.
- (3) Sewage left on the land may give offensive odour and may contain disease causing organisms.
- (4) Refuse dumps destroy the attractiveness of an area and may serve as the home of disease causing organisms, as well as dangerous animals such as snakes.

Control of land pollution:

- 1) By recycling metals and other materials.
- 2) By making laws
- 3) Do not dump waste on the land.

Sound (noise) pollution:

This is caused by loud noise or sound from radio sets, industries, vehicles and hooting etc. Noise makes people feel uncomfortable.

Effects of sound (noise) pollution:

- (1) It can damage the ear and cause deafness.
- (2) It causes people to feel uncomfortable.

Control of sound (noise) pollution:

- 1) Equipment's such as sound system must not be opened too loudly.
- 2) Industries which create a lot of noise must be sited away from residential areas.
- 3) Excess hooting and noisy vehicles must be avoided.
- 4) Industries sited in residential areas must be provided with sound absorbers to absorb the noise created.

Natural resources:

A natural resource is a product or a feature of the earth, upon which individuals and societies depend i.e useful to man

Such products or materials are usually changed or manufactured into useful substances or artifacts.

Explanation of natural resources:

As stated already, a natural resource is anything of found in nature, which is useful to man. Land and water are natural resources as well as biological resources on land and in water, such as flowers, trees, birds, fish and wild animals. For example people in rural communities make use of wild animals as natural resource, since such animals provide them with items such as meat. Trees provide wood for fuel and materials for building huts, canoes and so on. Also some trees and other plants provide bark, leaves and roots for medicine. Mineral natural resources include oil, coal, metals, stones and sand. Other natural resources are air, sunshine and climate.