

POLLUTION OF AIR AND WATER

INTRODUCTION

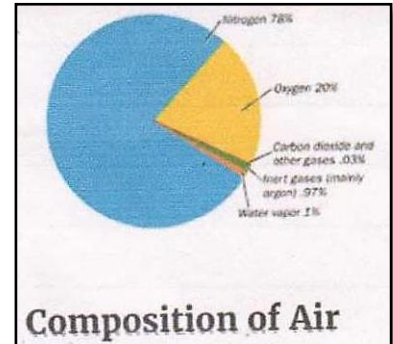
As you know that earth is the only planet on which life is present. Due to some of our activities we are creating pollution on earth. We are damaging our earth. So, in this chapter we will study that how air and water pollution is going to damage our earth and our environment.

AIR

As we know that our earth is surrounded by an envelope of gasses which is known as atmosphere. This combination of various gases present in our atmosphere is known as air.

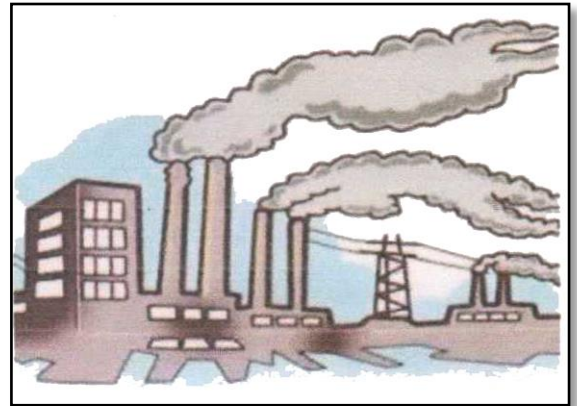
COMPOSITION OF AIR

By volume, about 78% of this mixture is nitrogen and about 21% is oxygen. Carbon dioxide, argon, methane, ozone and water vapour are also present in very small quantities.



AIR POLLUTION

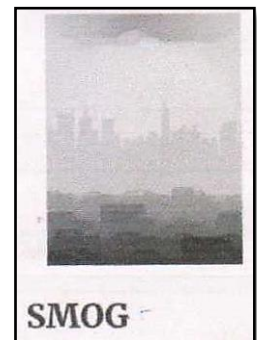
When air is contaminated by unwanted substances which have a harmful effect on both the living and the non-living. It is referred to as air pollution. So, now we will discuss about the various types of causes of air pollution.



SMOG

A thick fog-like layer in atmosphere especially during winters. This is smog which is made up of smoke and fog.

It may contain oxides of nitrogen which combine with other air pollutants and fog to form smog. The SMOG causes berating difficulties such as asthma, cough and wheezing in children.



CFCS-CHLORO FLUORO CARBON

CFCs are used in refrigerators, air conditioners and aerosol sprays. The vapours go in the upper atmosphere and deplete ozone layer. CFCs damage the ozone layer of the atmosphere. Depletion of ozone layer causes skin disorders.



CARBON MONOXIDE

Carbon monoxide is produced from incomplete burning of fuels such as petrol and diesel. When there is lack of oxygen then it results into incomplete burning of fuels which results into production of carbon monoxide instead of carbon dioxide. It is a poisonous gas. It reduces the oxygen carrying capacity of the blood. This means that it is very harmful for the human being. This can lead to death also.

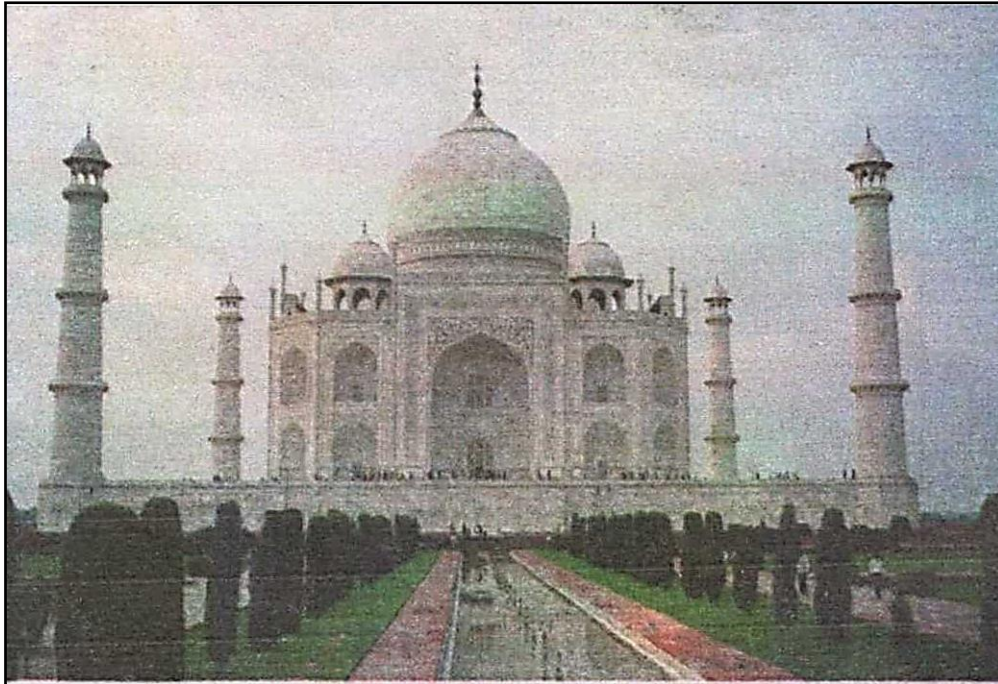


UNBURNED PARTICLES

Automobiles which burn diesel and petrol also produce tiny particles which remain suspended in air for long periods. These particles are also called SPM (Suspended particulate matter). They reduce visibility. When inhaled they cause disease like bronchitis. Such particles are also produced during industrial processes like steel making and mining. Power plants give out tiny ash particles which also pollute the atmosphere and they are so harmful that if inhaled can cause various diseases. So now we know that there are various types of pollutants present in the environment and they are very harmful for us.

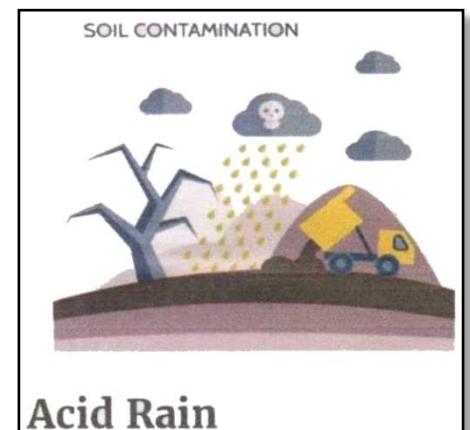
CASE STUDY-TAJ MAHAL

Taj Mahal is a very beautiful monument in our country. This monument is also corroding day by day. It is suffering with monument cancer and the main reason behind this corrosion is air pollution. Not only this, there are many other monuments which are a heritage property for India are getting spoilt because of air pollution.



ACID RAIN

- It is one of the main causes of monument cancer. The exhaust which is released from the vehicle contains nitrogen dioxide and sulphur dioxide as these gases are lighter they rise up in the sky.
- When rain water mixes with pollutants present in air. It results in forming nitric acids and sulphuric acid, resulting in acid rain.
- So, now the rain water no longer remains a pure water; it turns into acidic water.



EFFECT OF ACID RAIN

- i) It leads to monument cancer, as it combines with marbles damaging the calcium carbonate and deteriorate it.
- ii) It affects pH of soil and makes it unfit for growing plants and if there will be no plants it will lead bad to ecological imbalance.
- iii) It affects aquatic life too. When acid rain occur, it disturbs the pH balance of water bodies resulting into damage to the aquatic life. There are many more disadvantage just like acid rain. One more issue of concern is global warming. So, let's see what is global warming.

GLOBAL WARMING

- i) It is the increase in the concentration of certain gases like carbon dioxide, methane etc. in air due to which infra red rays get trapped in it and it leads to increase in overall temperature of earth.
- ii) The rays that come from the sun consist of visible light, infra red rays are visible light reaches earth's surface. On reaching earth, the infra red rays are reflected back and a portion of it is absorbed by earth's surface.
- iii) The reflected ones when pass through earth's atmosphere get trapped inside the gas molecules. As we know, it leads to heating effect. Therefore, the overall temperature of earth's surface rises.

One of the applications of global warming is green-house effect.



GREEN HOUSE EFFECT

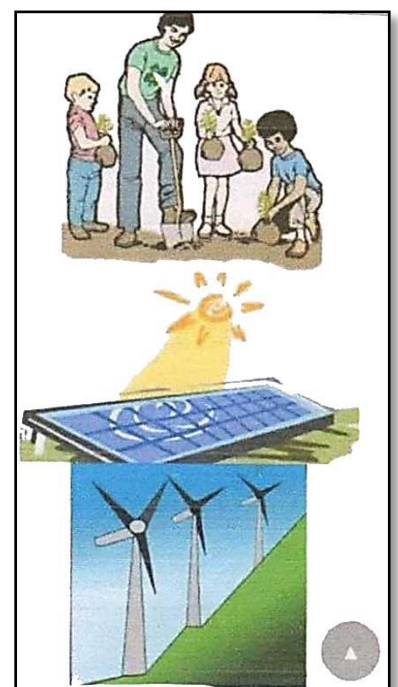


One of the reasons for global warming is green house effect. In winters, it is advised to keep plants in green house only. The roof allows infra red rays to enter but after reflection they are not allowed to go back. As a result, they get trapped inside the green house and growth of plants is stimulated because optimum temperature is achieved inside the green house.

So, we can take certain steps to lower down the pollution level in our environment. But what are they?

STEP TO REDUCE AIR POLLUTION

- Cleaner fuels like CNG (Compressed Natural Gas). Its main component is methane.
- No crackers.
- Alternative fuels instead of fossil fuels like solar energy, hydropower and wind energy.
- Plant trees as this will lead to healthy environment.
- Do not burn dry leaves.

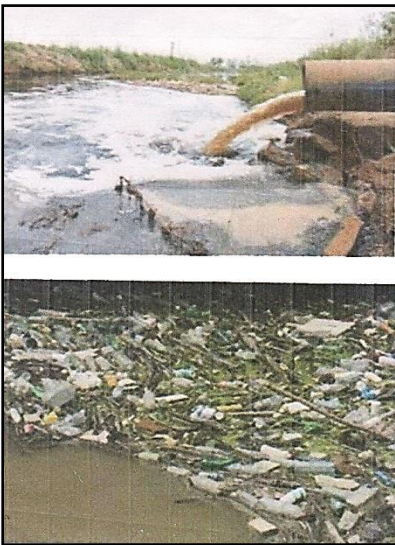


WATER



As you all know that water is very important because it is used for various purposes such as drinking, bathing, washing, etc. But due to some of our activities water is also getting polluted. So, let's see what is water pollution?

WATER POLLUTANTS



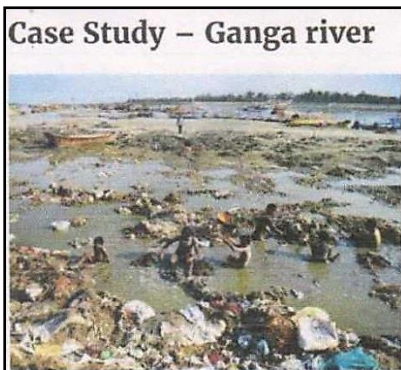
Whenever harmful substances such as sewage, toxic chemicals, silt, etc., get mixed with water, the water becomes polluted. The substances that pollute water are called water pollutants.

As shown in the image, the waste bottles, wrappers which are thrown into the water causes water pollution due to this the water becomes unfit for drinking. Now we will study the effects of water pollution.

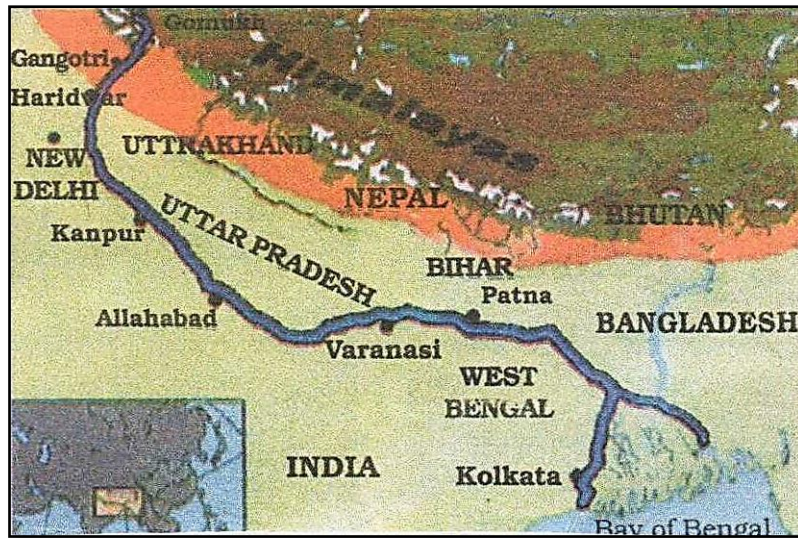
HARMFUL EFFECTS OF WATER POLLUTION

- It affects the aquatic life
- It leads to eutrophication. When there is excess discharge of chemical into the water, this result into excess growth of algae. With the growth of more and more algae a new problem will arise that is the oxygen in the water will reduce and result into death of aquatic animals.
- It also spread lot of water borne disease. Now we will take up with a care study of Ganga river.

CASE STUDY GANGA RIVER



A serious problem which is faced by this holy river is that it has become a much polluted river. World Wide Fund for Nature (WWF's) study found that Ganga is one of the ten most endangered rivers in the world. The towns and cities, through which the river flows, throw large quantities of garbage, untreated sewage, dead bodies and many other harmful things, directly into rivers. All this is leading towards the pollution in the river Ganga.



To control pollution level in the Ganga, A programme was initiated known as the Ganga Action Plan.

GANGA ACTION PLAN

Ganga action plan is massive multi-crore project implemented in 1985 which has undertaken to make the river ganga pollution free.

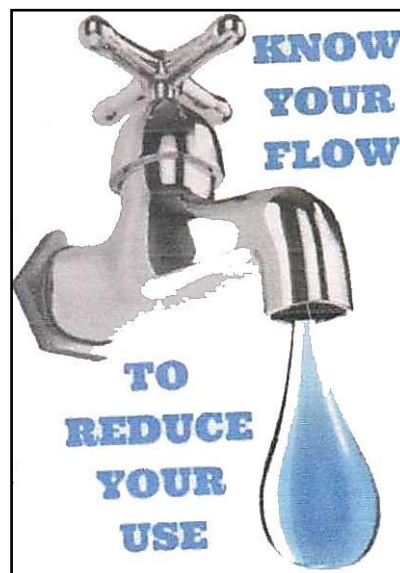
As you can see people are voluntarily contributing to clean the river ganga they are cleaning the garbage from the river. So due to this, the ganga action plan was launched in the year 1985 but what was the aim of this plan?

Aim to reduce pollution levels in river ganga. So, the main aim was to reduce the pollution level of ganga to make it a clean river. As we know that the increasing population and industrialization have already damaged this mighty river beyond repair. So, the ganga action plan was not as successful as it was thought.

Therefore it becomes important for all of us to take a responsibility to keep ganga clean.

POTABLE WATER

Water which is suitable for drinking is called potable water. The water, which is fit for drinking because it is clean and transparent. The pH level of this water is 7. There are no microorganism present in this water. So, how can we make our water safe for drinking purpose? Let's have a look at this.



WAYS TO MAKE WATER FIT FOR DRINKING

1. **FILTRATION** :- You have already seen how water is filtered. This is a physical method of removing impurities. A popular household filter is a candle type filter. There is reverse osmosis system present in such filters which make water pure.
2. **BOILING** :- Many households use boiling as a method for obtaining safe drinking water. Boiling kills the germs present in the water.
3. **CHLORINATION** :- Chlorination is a commonly used chemical method for purifying water. It is done by adding chlorine tablets or bleaching powder to the water. We must be cautious. We should not use more chlorine tablets than specified.