Pollution of air and water

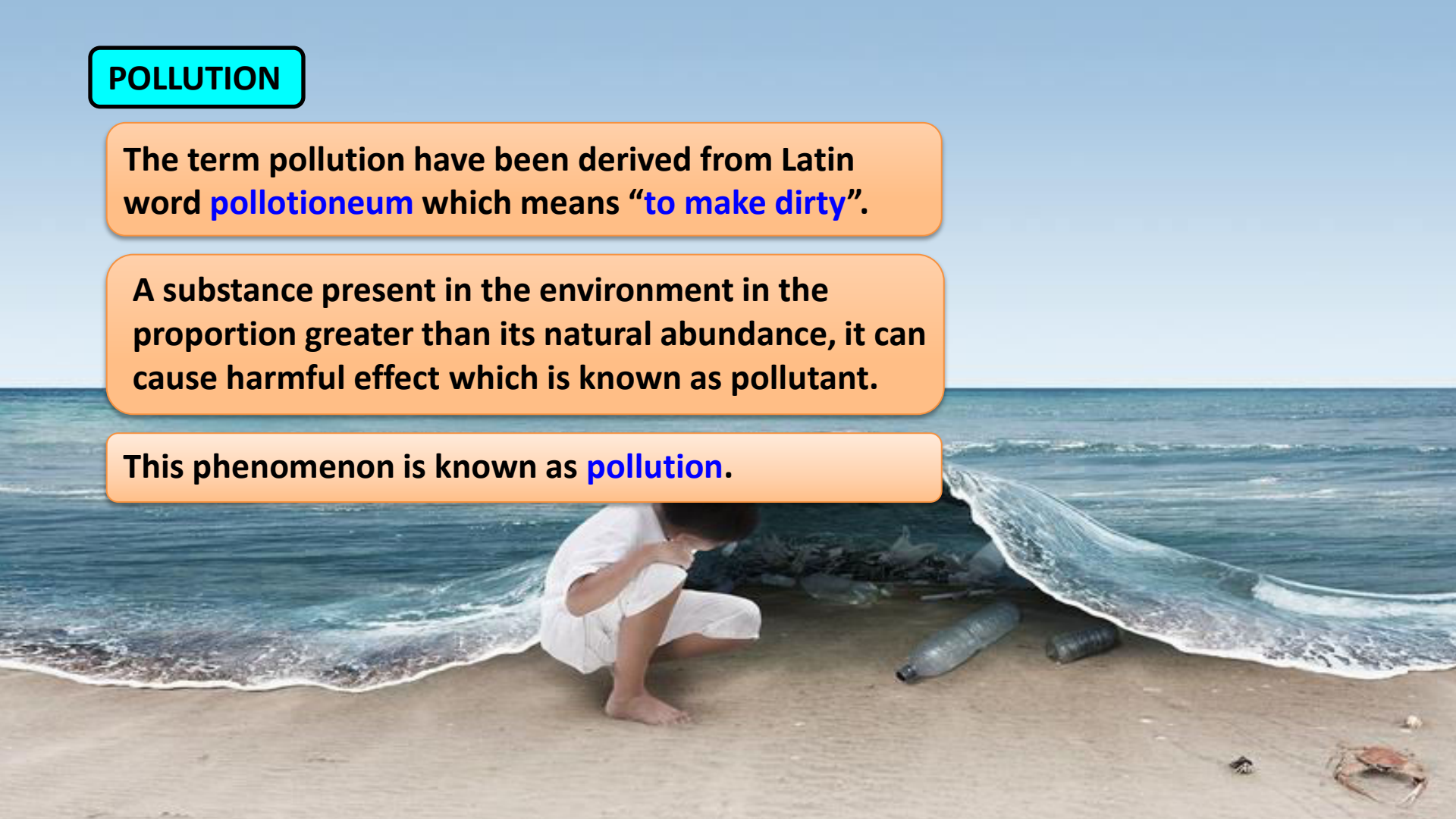
- Introduction
- Types of pollution
- Air pollution
- Sources and causes of air pollution

POLLUTION

The term pollution have been derived from Latin word pollotioneum which means “to make dirty”.

A substance present in the environment in the proportion greater than its natural abundance, it can cause harmful effect which is known as pollutant.

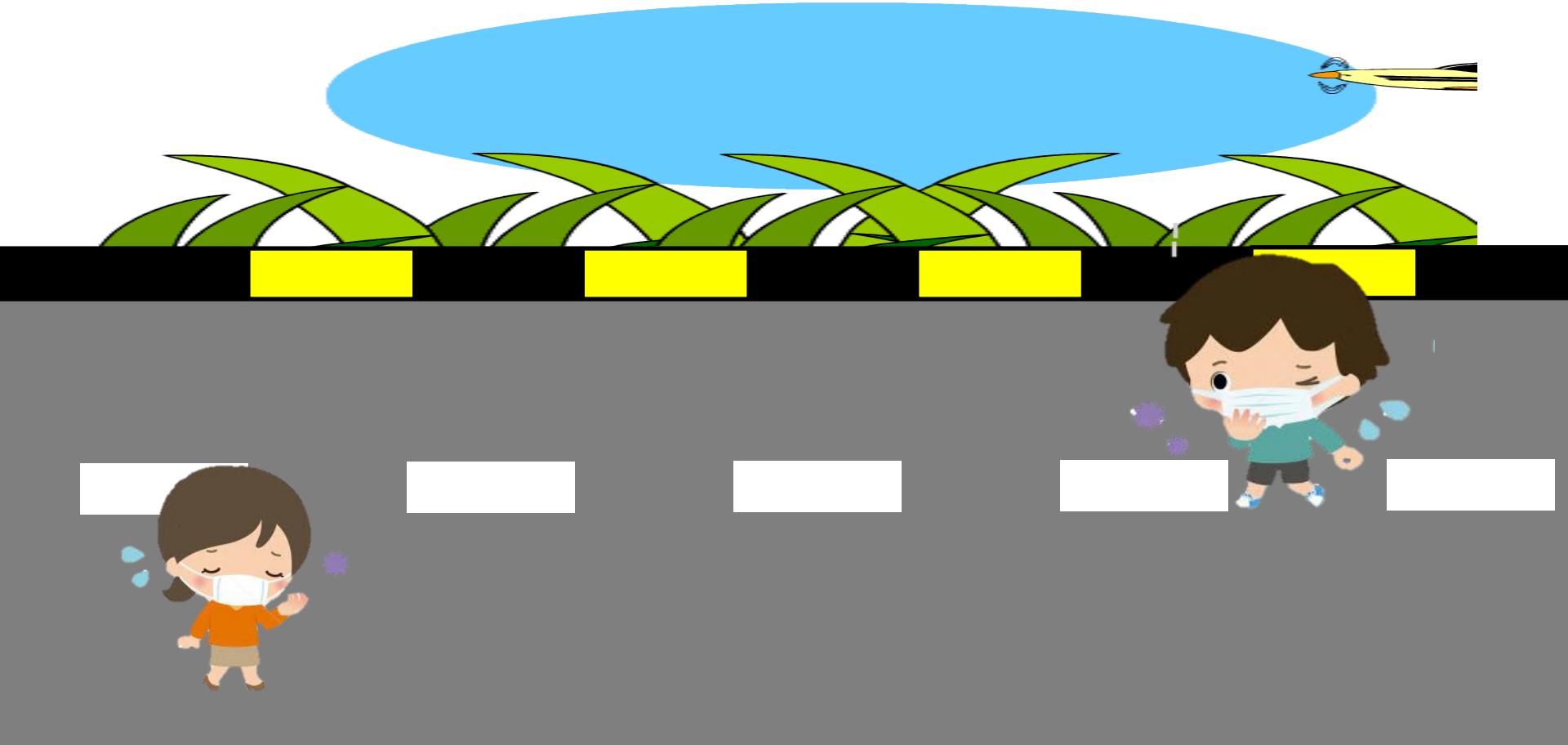
This phenomenon is known as pollution.



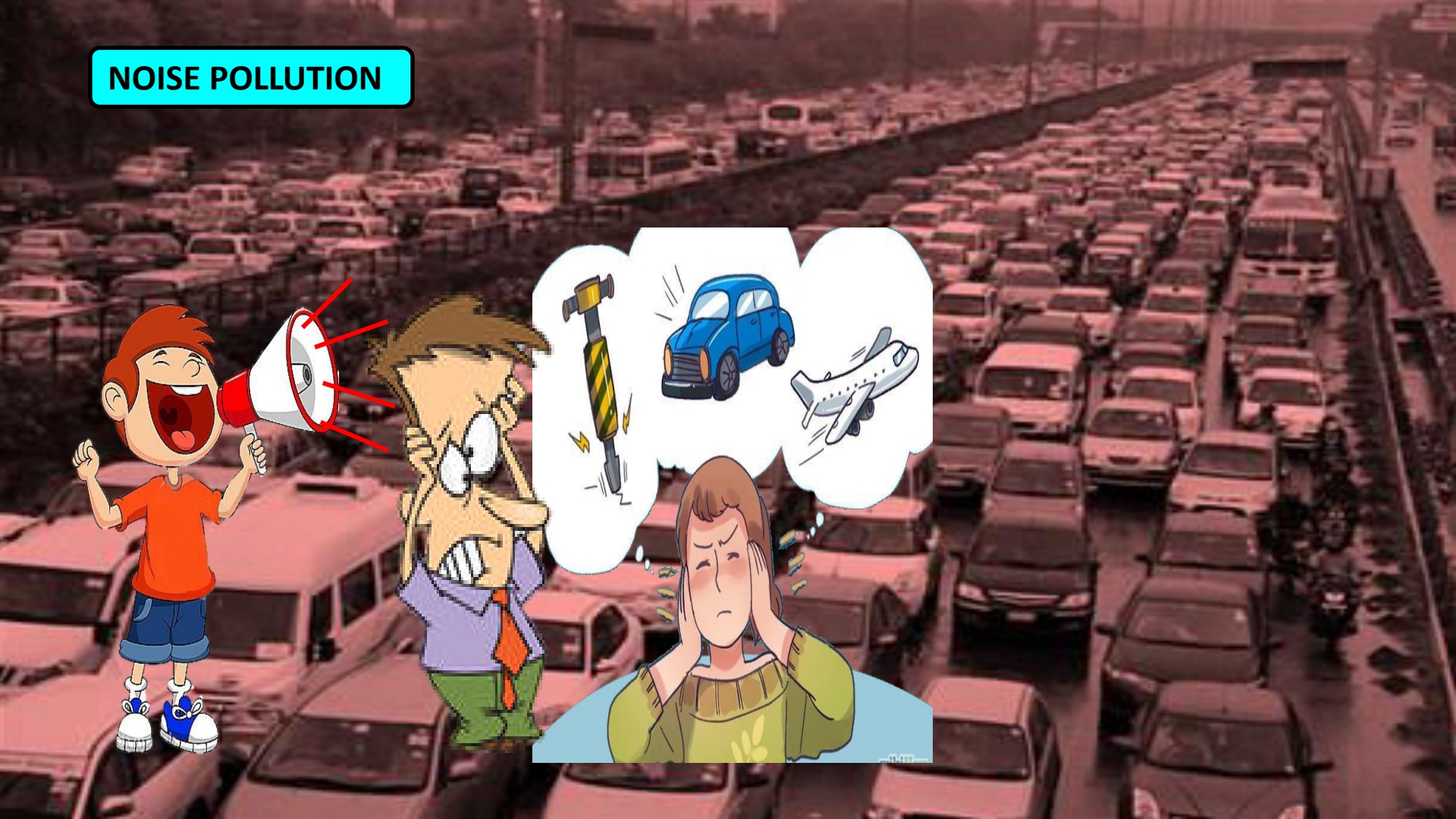
POLLUTION

Pollution can be of different types

AIR POLLUTION



NOISE POLLUTION



LAND POLLUTION

WATER POLLUTION

AIR

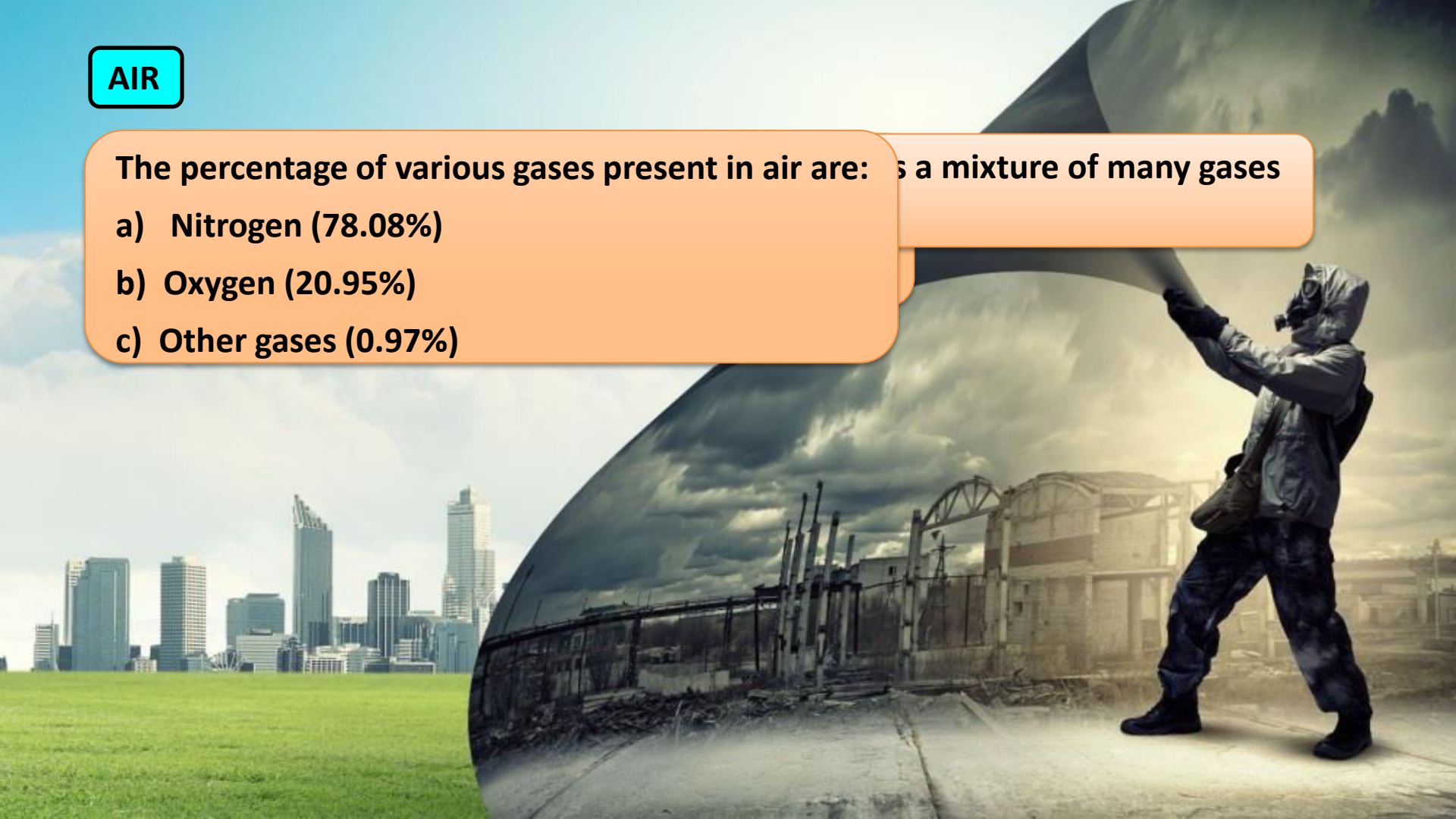
s a mixture of many gases

The percentage of various gases present in air are:

a) Nitrogen (78.08%)

b) Oxygen (20.95%)

c) Other gases (0.97%)



AIR POLLUTION

Natural processes and to a large extent human activity are responsible for the release of various chemicals in the air.

AIR POLLUTION

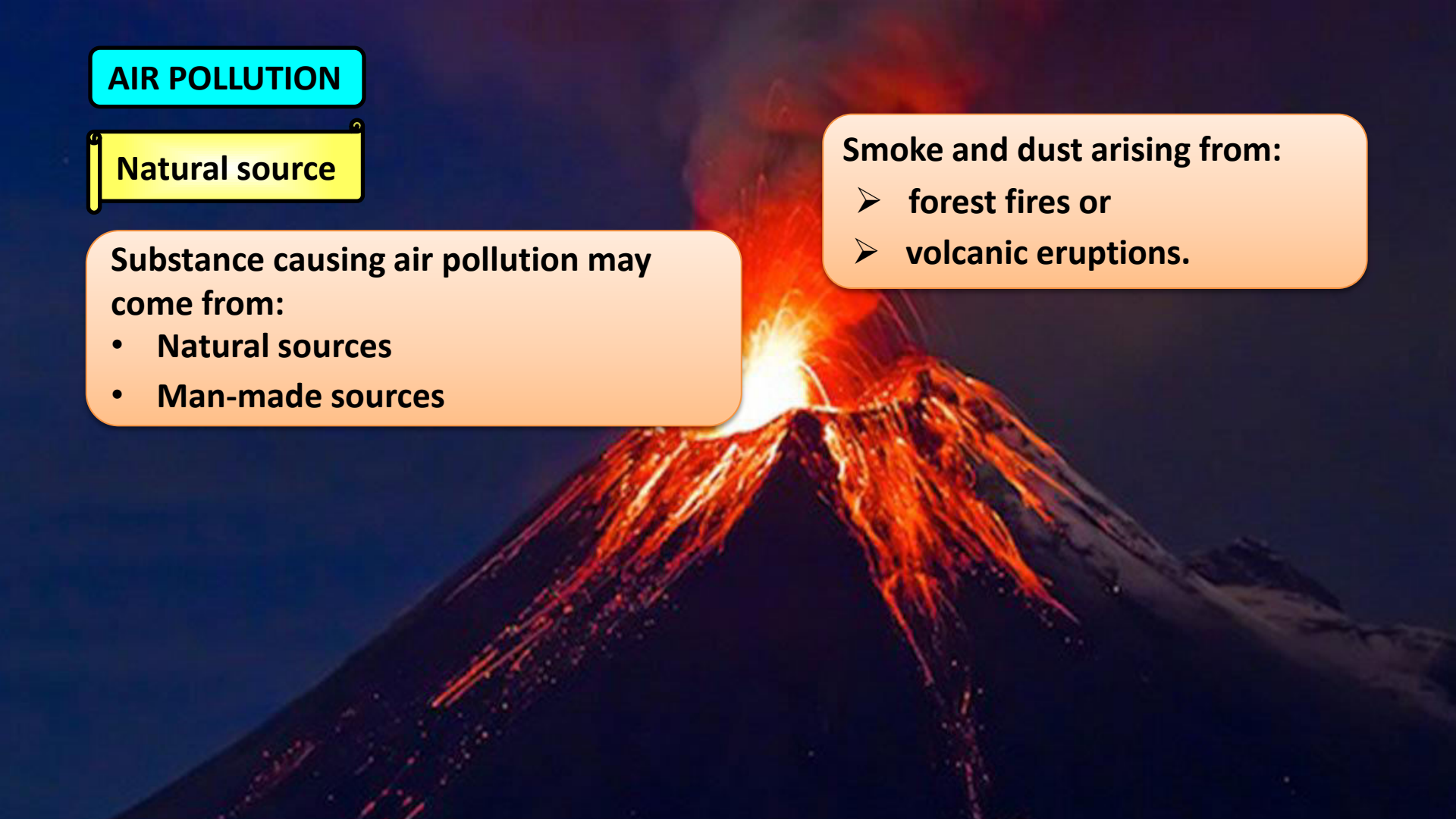
Natural source

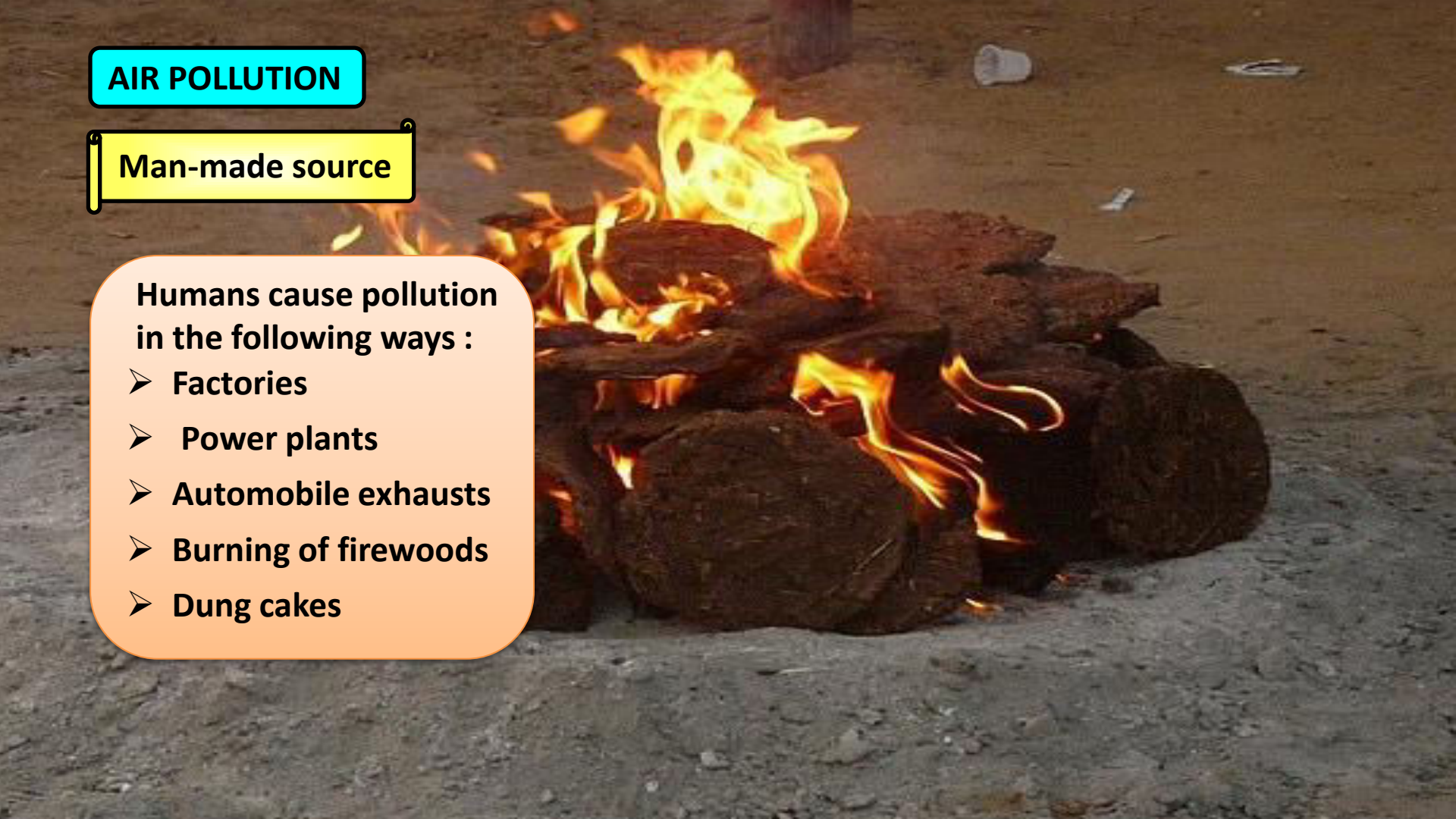
Substance causing air pollution may come from:

- Natural sources
- Man-made sources

Smoke and dust arising from:

- forest fires or
- volcanic eruptions.





AIR POLLUTION

Man-made source

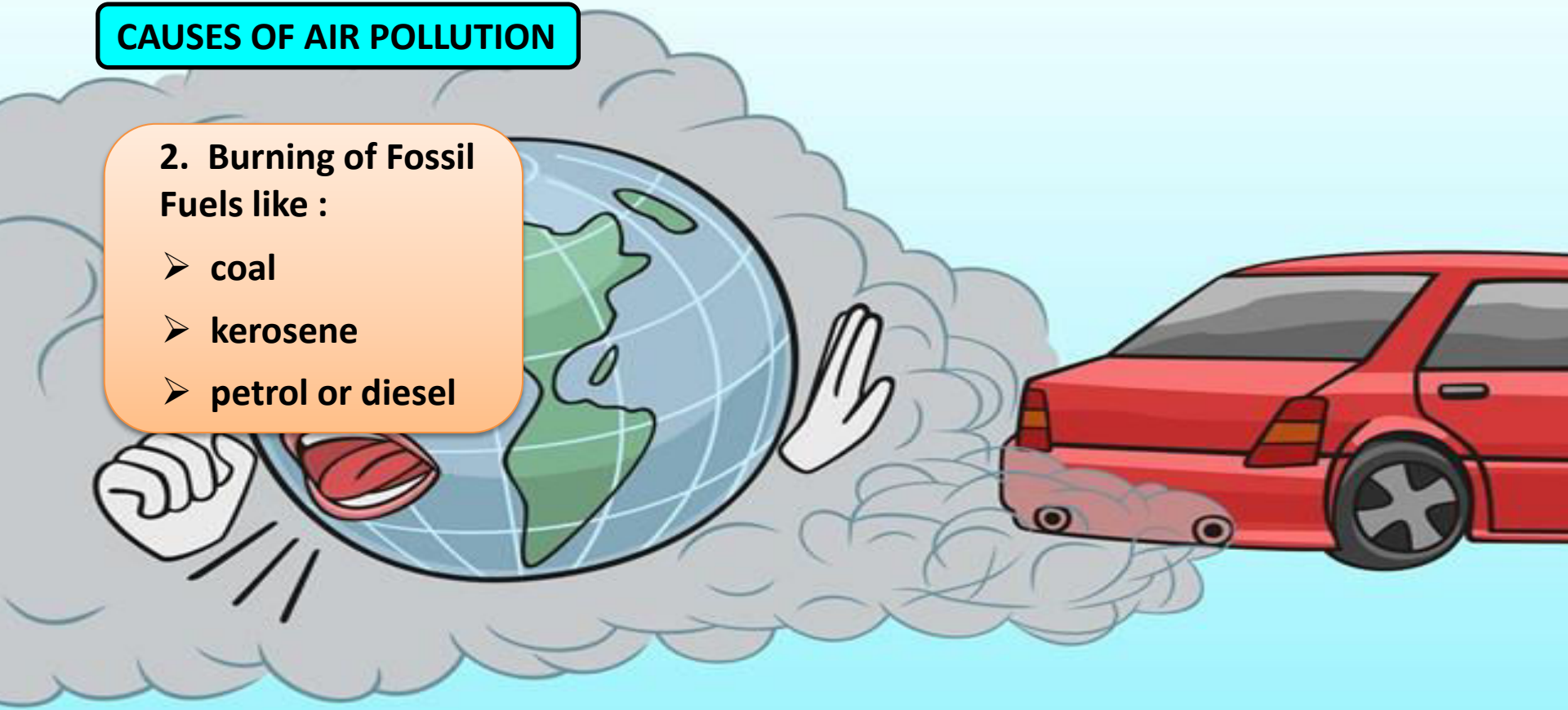
Humans cause pollution in the following ways :

- Factories
- Power plants
- Automobile exhausts
- Burning of firewoods
- Dung cakes

CAUSES OF AIR POLLUTION

1. Smoke from:
   - factories
   - and automobiles

CAUSES OF AIR POLLUTION



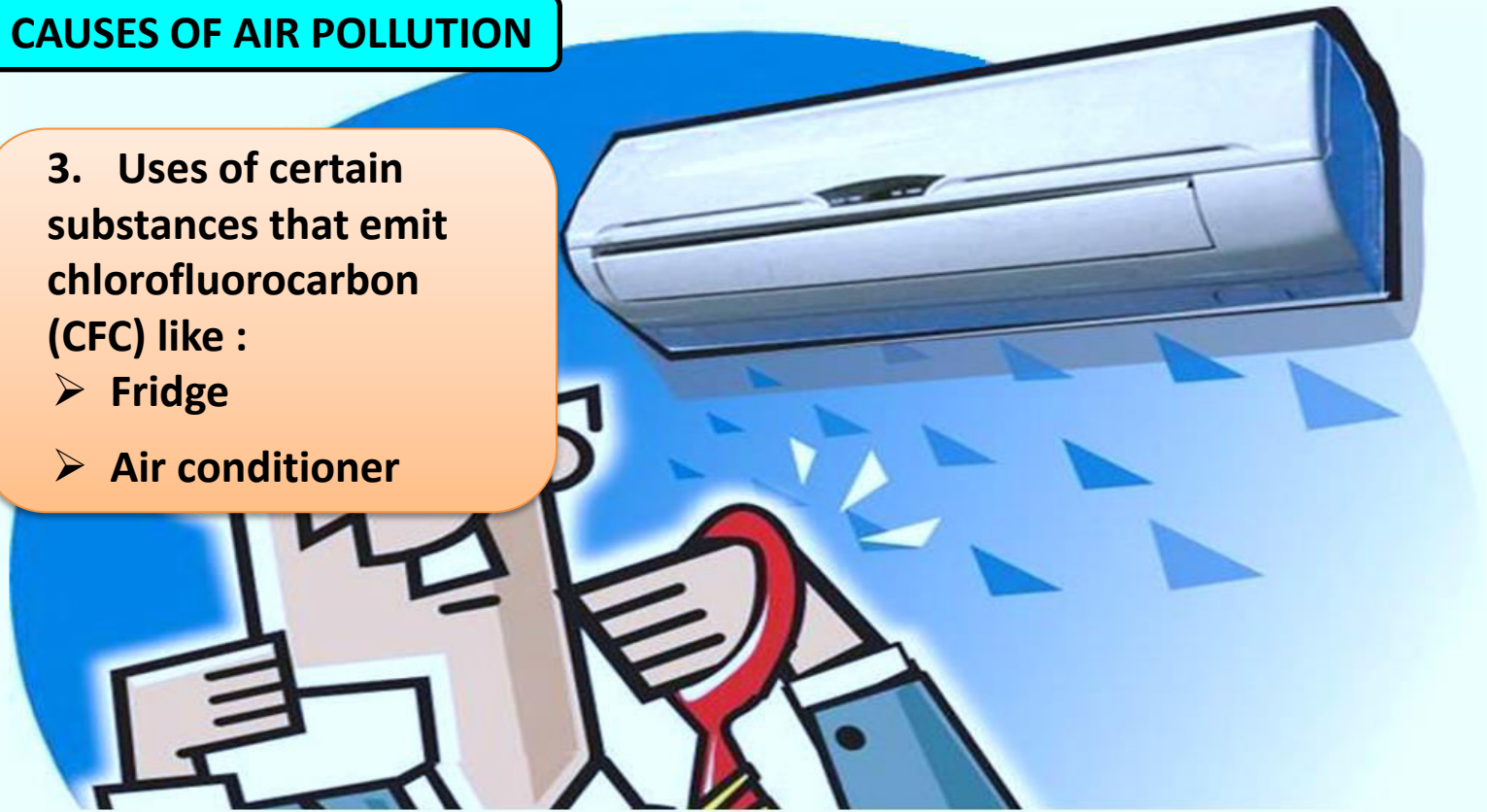
2. Burning of Fossil Fuels like :

- coal
- kerosene
- petrol or diesel

CAUSES OF AIR POLLUTION

3. Uses of certain substances that emit chlorofluorocarbon (CFC) like :

- **Fridge**
- **Air conditioner**



CAUSES OF AIR POLLUTION

4. Use of insecticides, pesticides and fertilizers in agricultural activities emit harmful chemicals into the air.

Questions

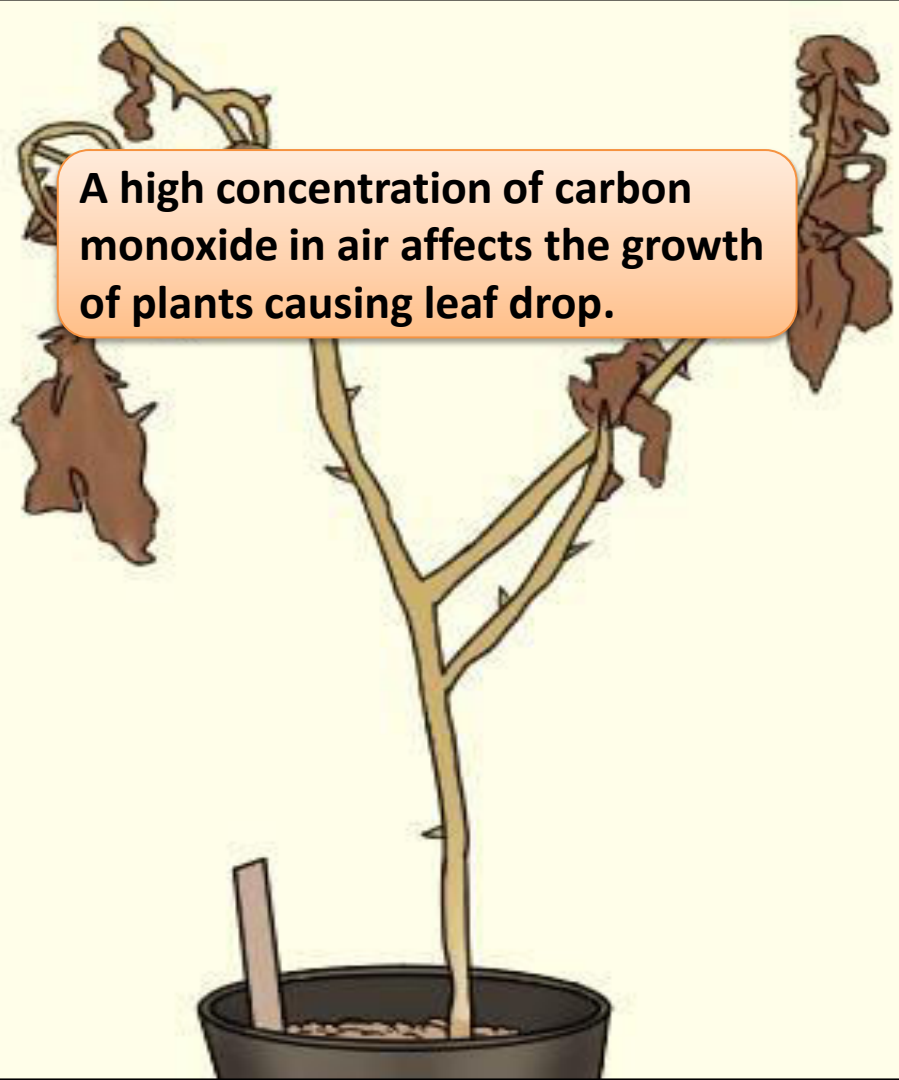
1. What do you mean by air pollution?
2. State the latin word for pollution.
3. What are the causes of indoor air pollution ?
4. State different types of pollution.
5. State various causes of air pollution.

Pollution of air and water

- Air pollutants and their harmful effects

AIR POLLUTANTS

Harmful Effects Of Carbon Monoxide



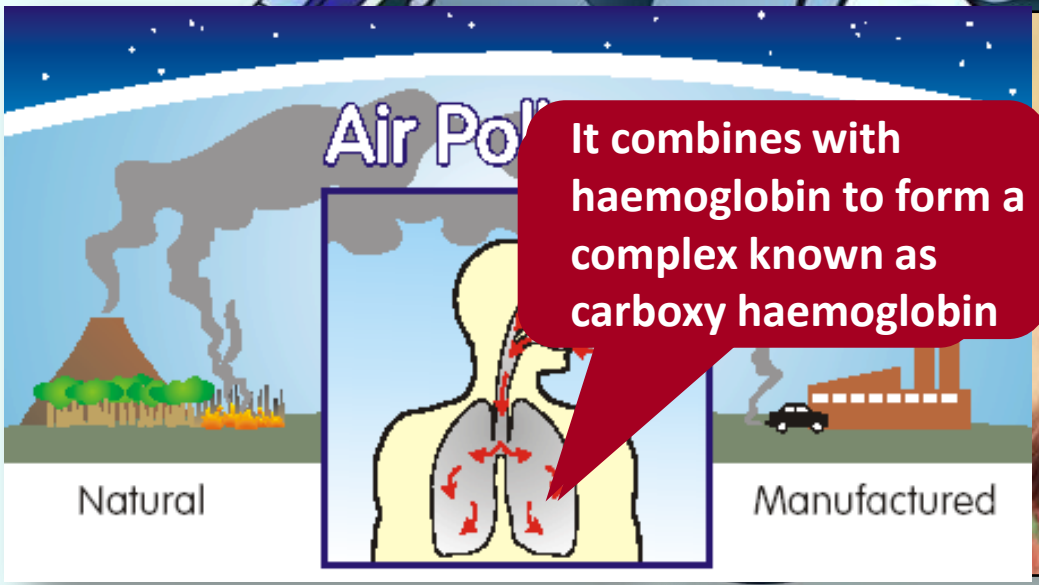
A high concentration of carbon monoxide in air affects the growth of plants causing leaf drop.

AIR POLLUTANTS

Harmful Effects Of Carbon Monoxide

Carbon monoxide when inhaled affects our respiratory system.

It causes suffocation and ultimately death.

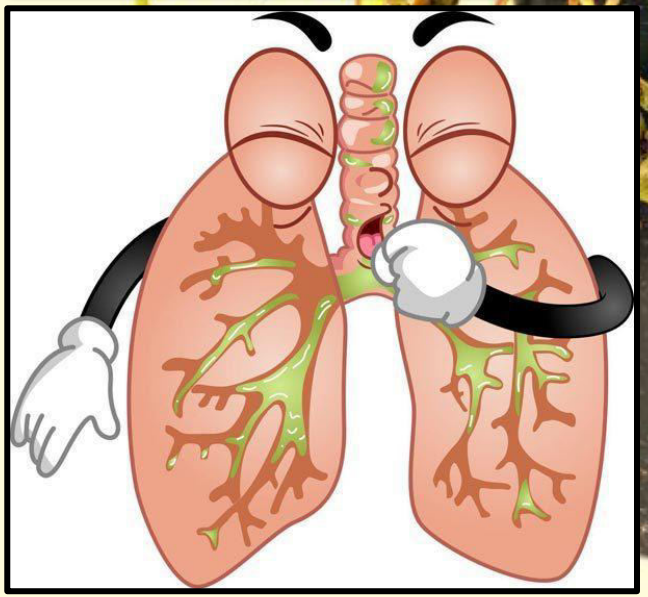


It combines with haemoglobin to form a complex known as carboxy haemoglobin

AIR POLLUTANTS

Harmful Effects Of Nitrogen Dioxide

Nitrogen dioxide cause many respiratory problems in human being.



As it results in retardation of their photosynthetic activity.

AIR POLLUTANTS

Harmful Effects Of Smog

Smog causes breathing difficulties such as:

- asthma
- cough
- wheezing in humans

nitrogen which
llutants and fog

AIR POLLUTANTS

Harmful Effects Of CFCs (CFCs)

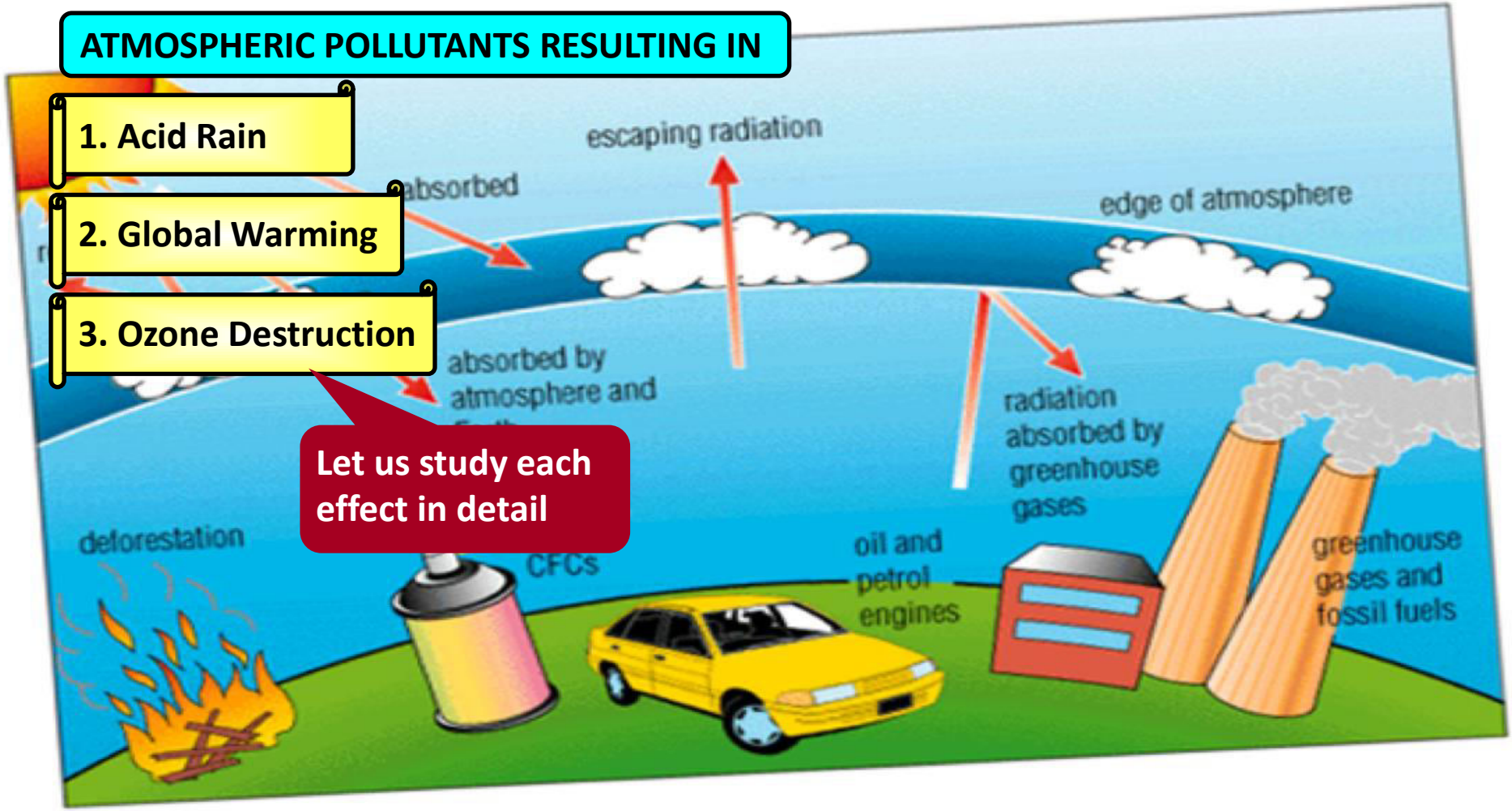
CFCs causes depletion of ozone layer.

ozone layer of the atmosphere.

ATMOSPHERIC POLLUTANTS RESULTING IN

1. Acid Rain
2. Global Warming
3. Ozone Destruction

Let us study each effect in detail



Questions

1. Name the main air polluting gases.
2. What is smog?
3. What are the problems arising from air pollution?
4. What are CFCs?

Pollution of air and water

- Acid rain
- Formation of acid rain
- Harmful effects of acid rain

ACID RAIN

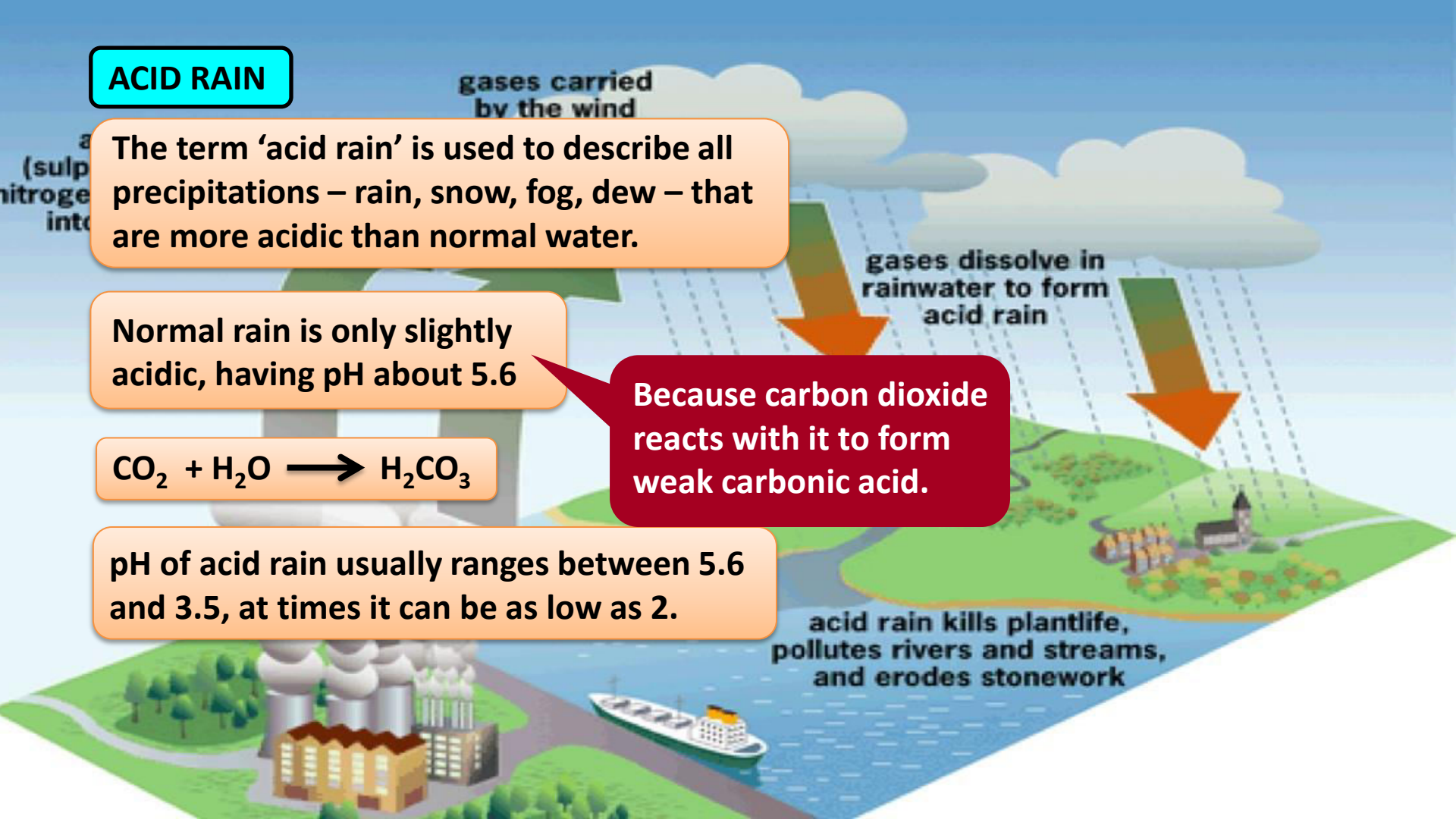
The term ‘acid rain’ is used to describe all precipitations – rain, snow, fog, dew – that are more acidic than normal water.

Normal rain is only slightly acidic, having pH about 5.6

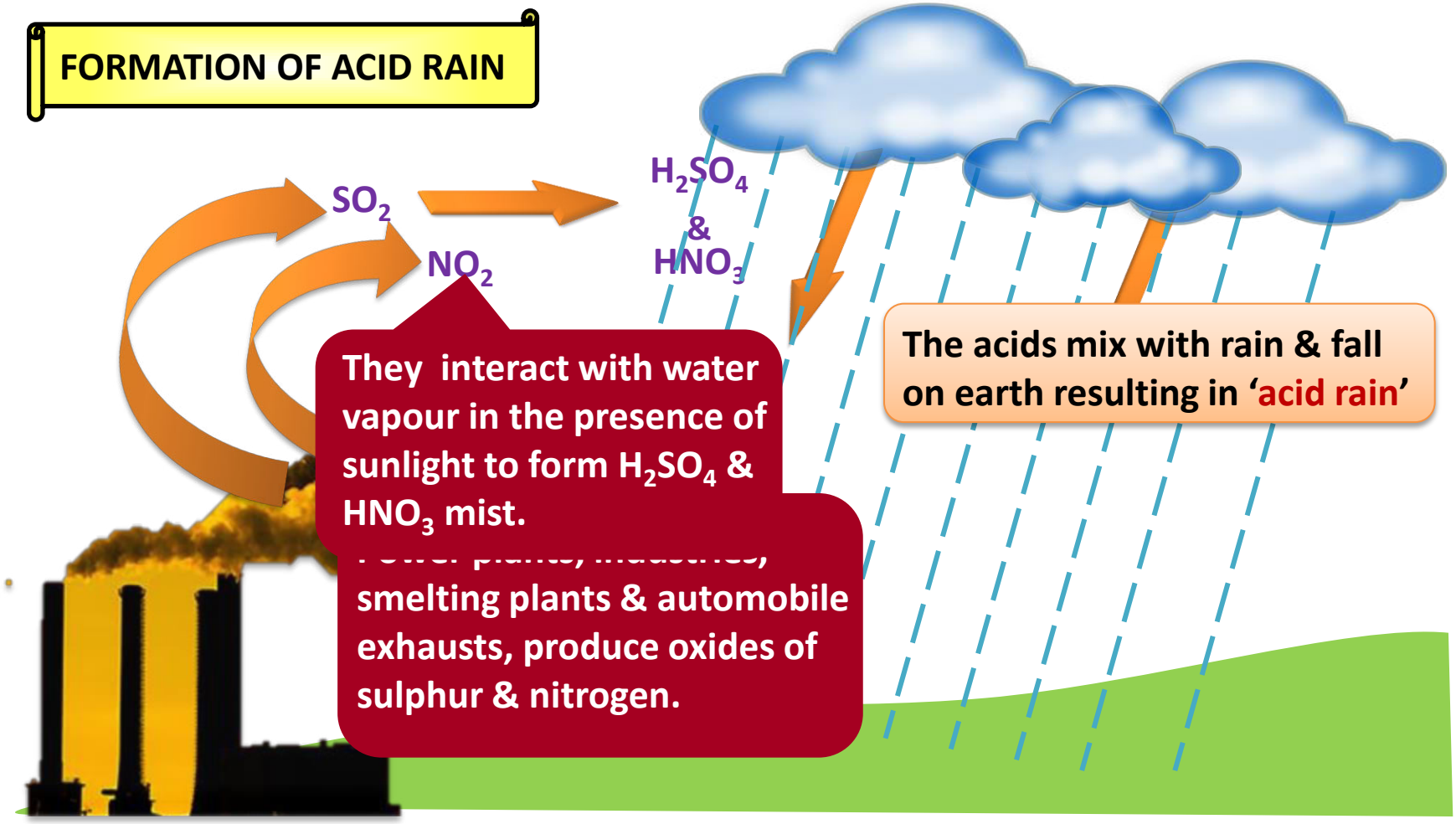
Because carbon dioxide reacts with it to form weak carbonic acid.

$CO_2 + H_2O \longrightarrow H_2CO_3$

pH of acid rain usually ranges between 5.6 and 3.5, at times it can be as low as 2.



FORMATION OF ACID RAIN



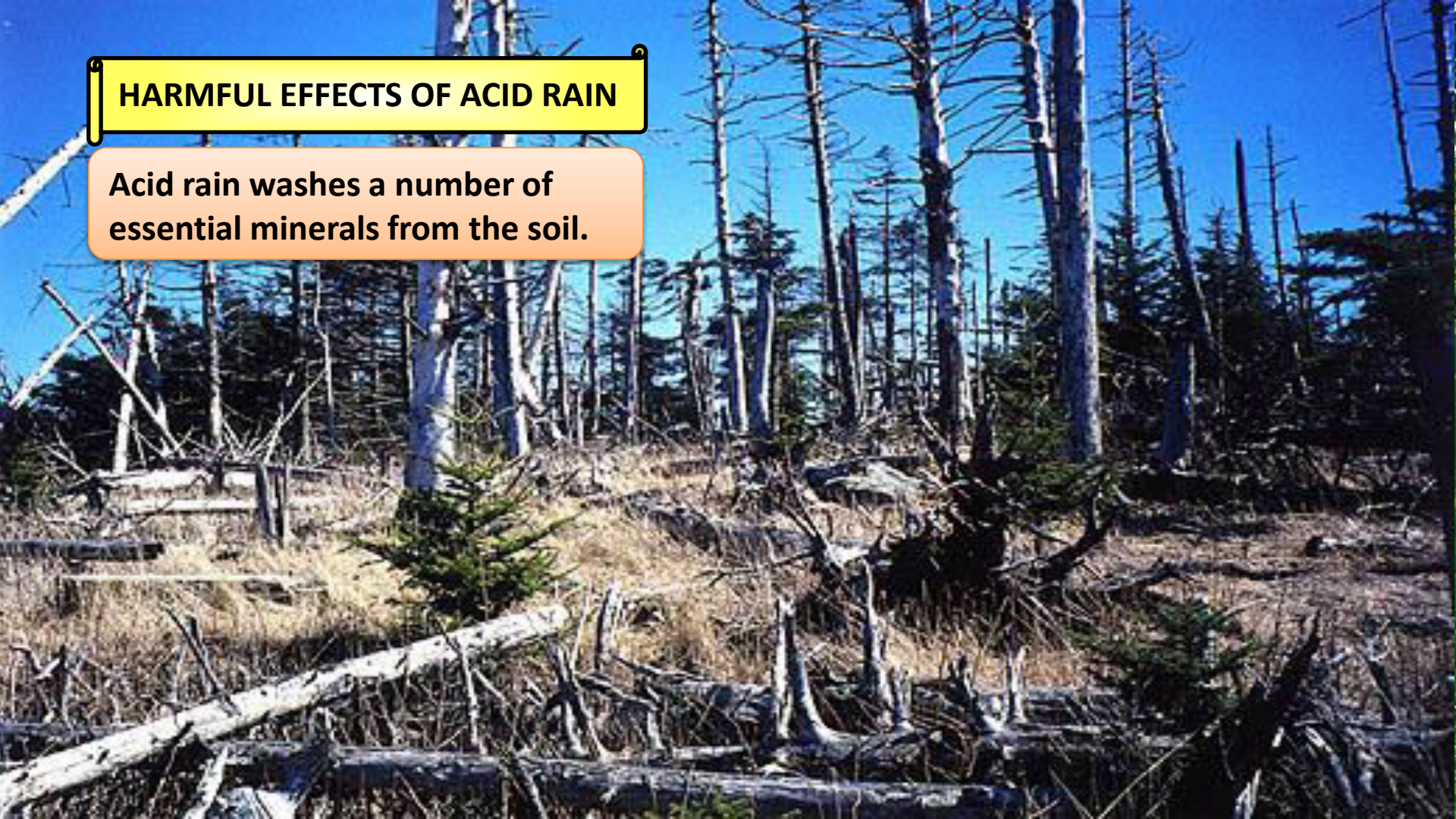
HARMFUL EFFECTS OF ACID RAIN

Statues and structures made up of marbles and limestone are slowly corroded due to acid rain.

When acid falls on marble, both sulphuric acid and nitric acid dissolve marble to form salt.

In this way acid rain corrodes the marble of the monument.

This phenomenon is also called marble cancer.



HARMFUL EFFECTS OF ACID RAIN

Acid rain washes a number of essential minerals from the soil.

HARMFUL EFFECTS OF ACID RAIN

Acid rain has an adverse effect on aquatic life.

Questions

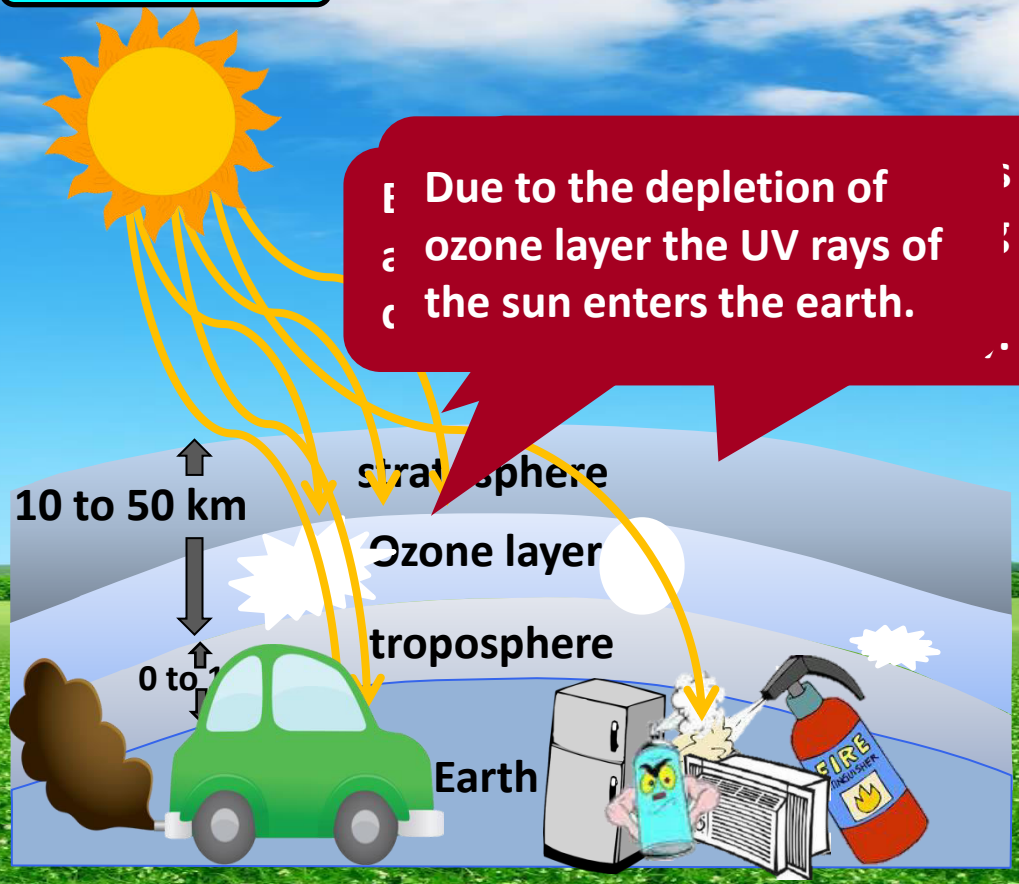
1. What do you mean by marble cancer?
2. What is acid rain?
3. What are the causes of acid rain?
4. How does acid rain affects soil and plants?

Pollution of air and water

- Ozone layer
- Ozone layer depletion
- Effects of UV radiation


OZONE LAYER
Umbrella not only save us from rain but even the sun rays.
Its too hot today

OZONE LAYER



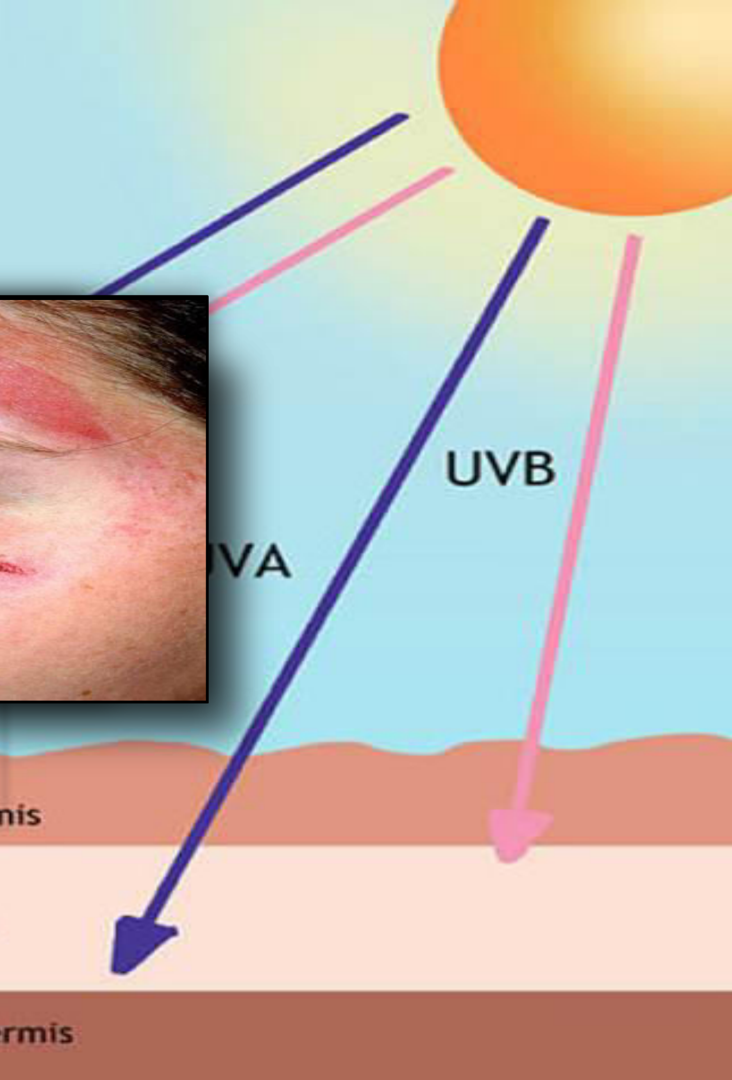
Due to the depletion of ozone layer the UV rays of the sun enters the earth.

Let us see what are the effect cause due to this.

EFFECT OF UV RADIATION

On humans

- Skin cancer
- Eye cataract
- Sun burn
- Premature aging of the skin
- Suppression of the immune system



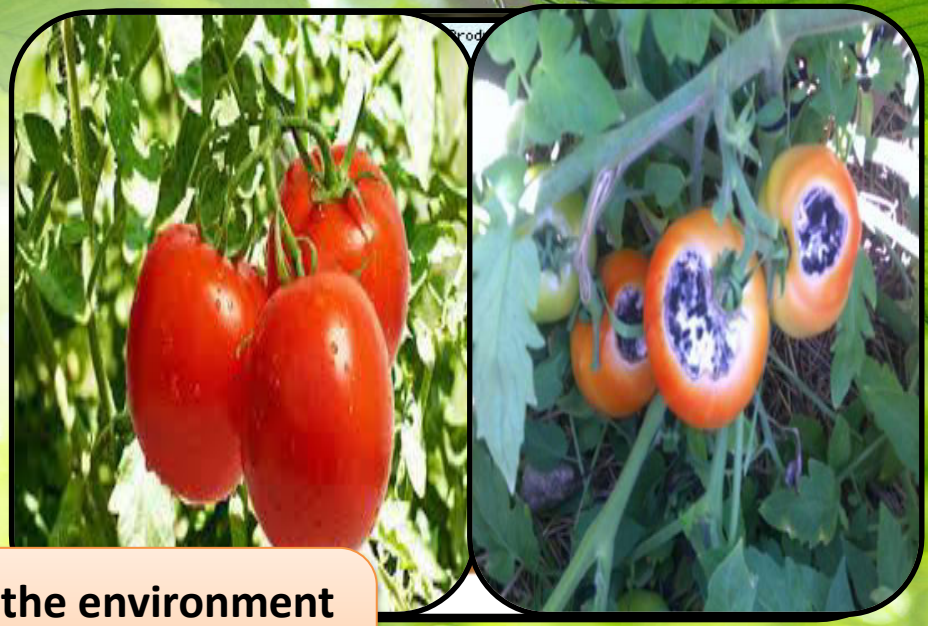
EFFECT OF UV RADIATION

On plants

- Retards plant growth
- Affects the quality [illegible]etables
- Increases harmful mutati[illegible]
- Disrupts ecosystems

UV rays generate free radicals in the cell which are very reactive. They interfere in the normal process that prevent DNA damage so they ultimately increase the mutation

It affects the environment such that the survival of the life is threatened.



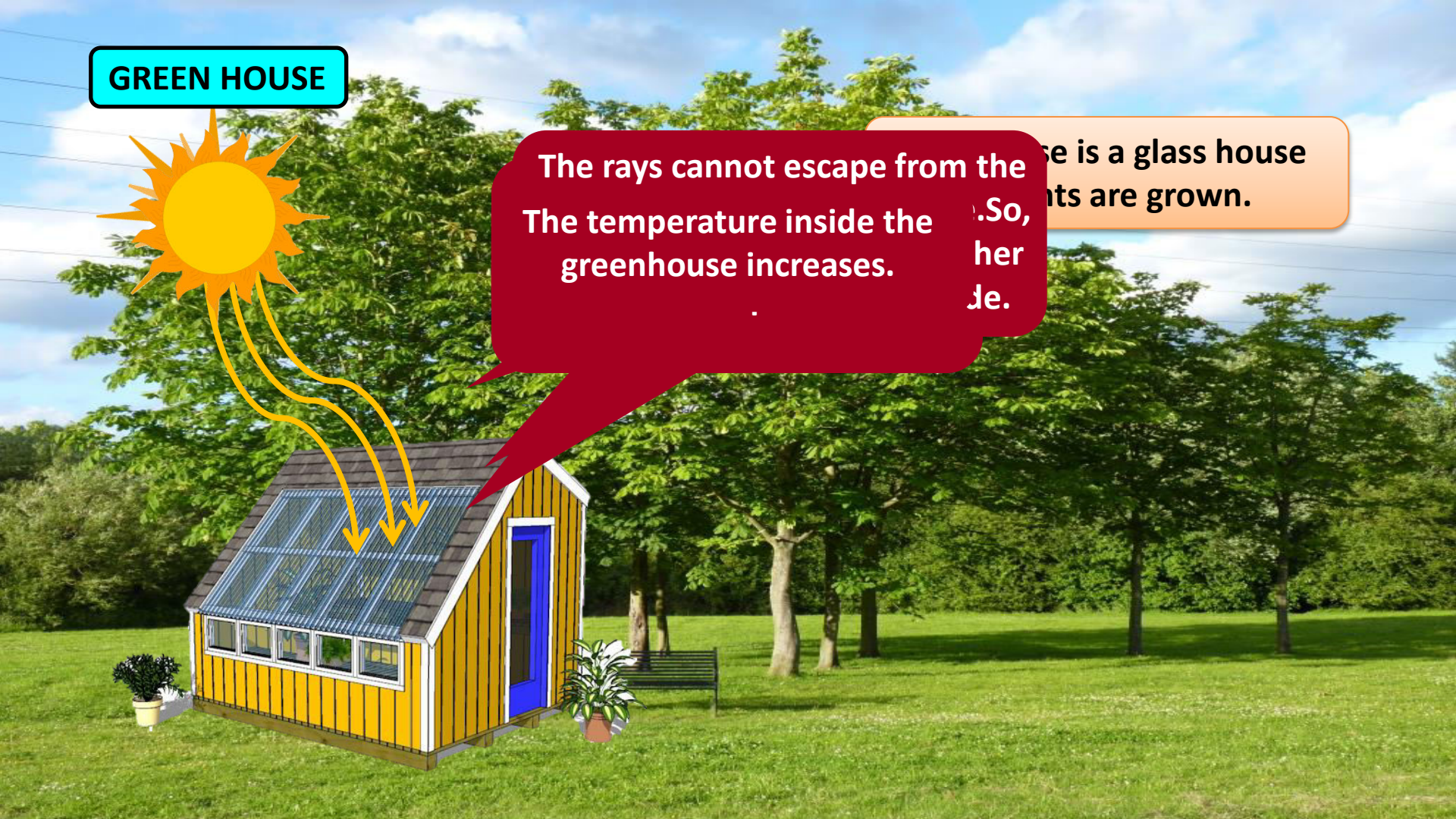
Questions

1. How is ozone helpful to our environment?
2. Which gas is responsible for the depletion of ozone layer?
3. Which radiations are absorbed by ozone?
4. State the effects of UV radiations on plants.

Pollution of air and water

- Green house effect
- Global warming
- Consequences of global warming

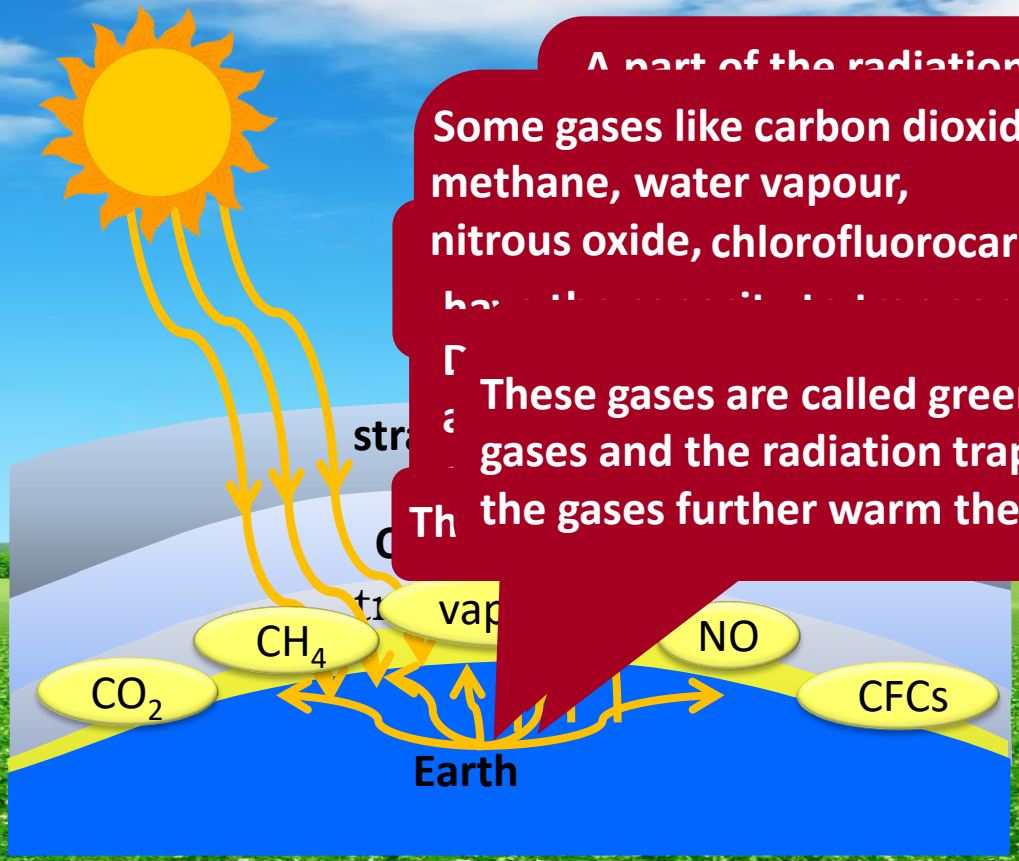
GREEN HOUSE



e is a glass house
nts are grown.

The rays cannot escape from the
.So,
The temperature inside the greenhouse increases.
her
de.

GREENHOUSE EFFECT AND GLOBAL WARMING



Some gases like carbon dioxide, methane, water vapour, nitrous oxide, chlorofluorocarbon

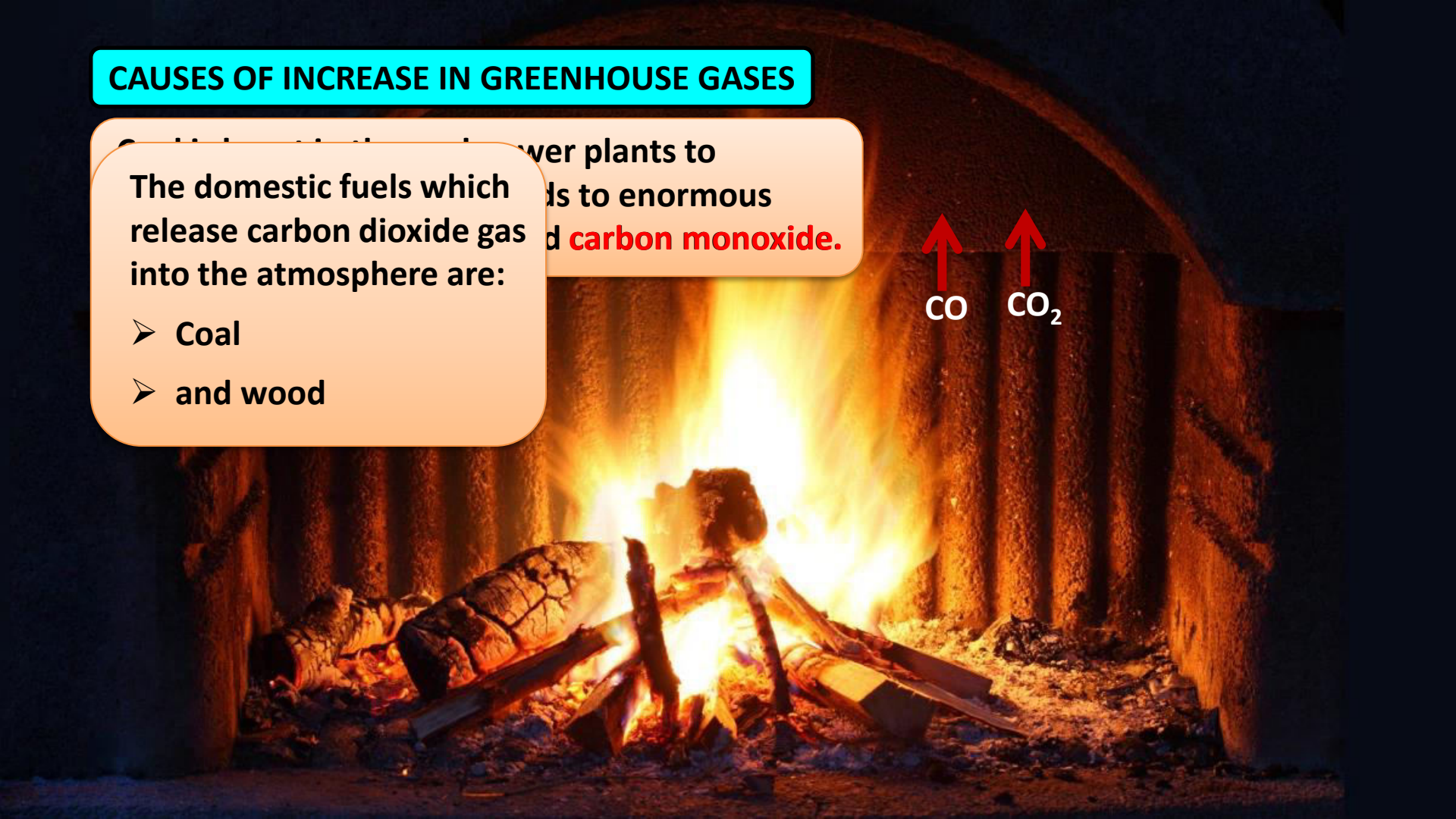
These gases are called greenhouse gases and the radiation trapped by the gases further warm the earth.

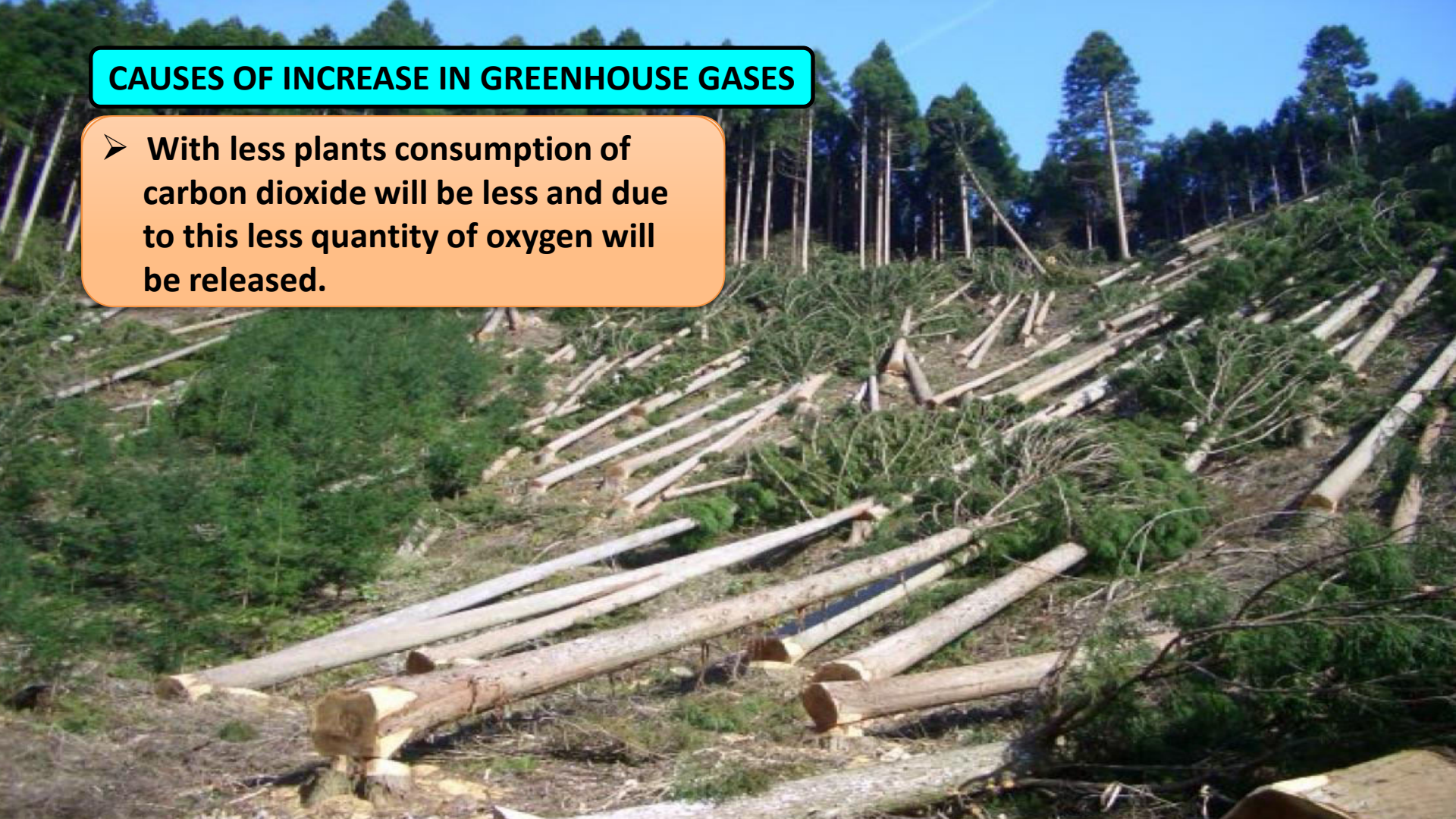
CAUSES OF INCREASE IN GREENHOUSE GASES

…wer plants to …ds to enormous …d **carbon monoxide.**

The domestic fuels which release carbon dioxide gas into the atmosphere are:

- Coal
- and wood





CAUSES OF INCREASE IN GREENHOUSE GASES

- With less plants consumption of carbon dioxide will be less and due to this less quantity of oxygen will be released.

CONSEQUENCES OF GLOBAL WARMING

This will lead to rise in the sea level resulting in floods and loss of soil.

to

common over the years.

Questions

1. What is green house effect?
2. Which phenomenon causes global warming?
3. Write some effects of global warming.

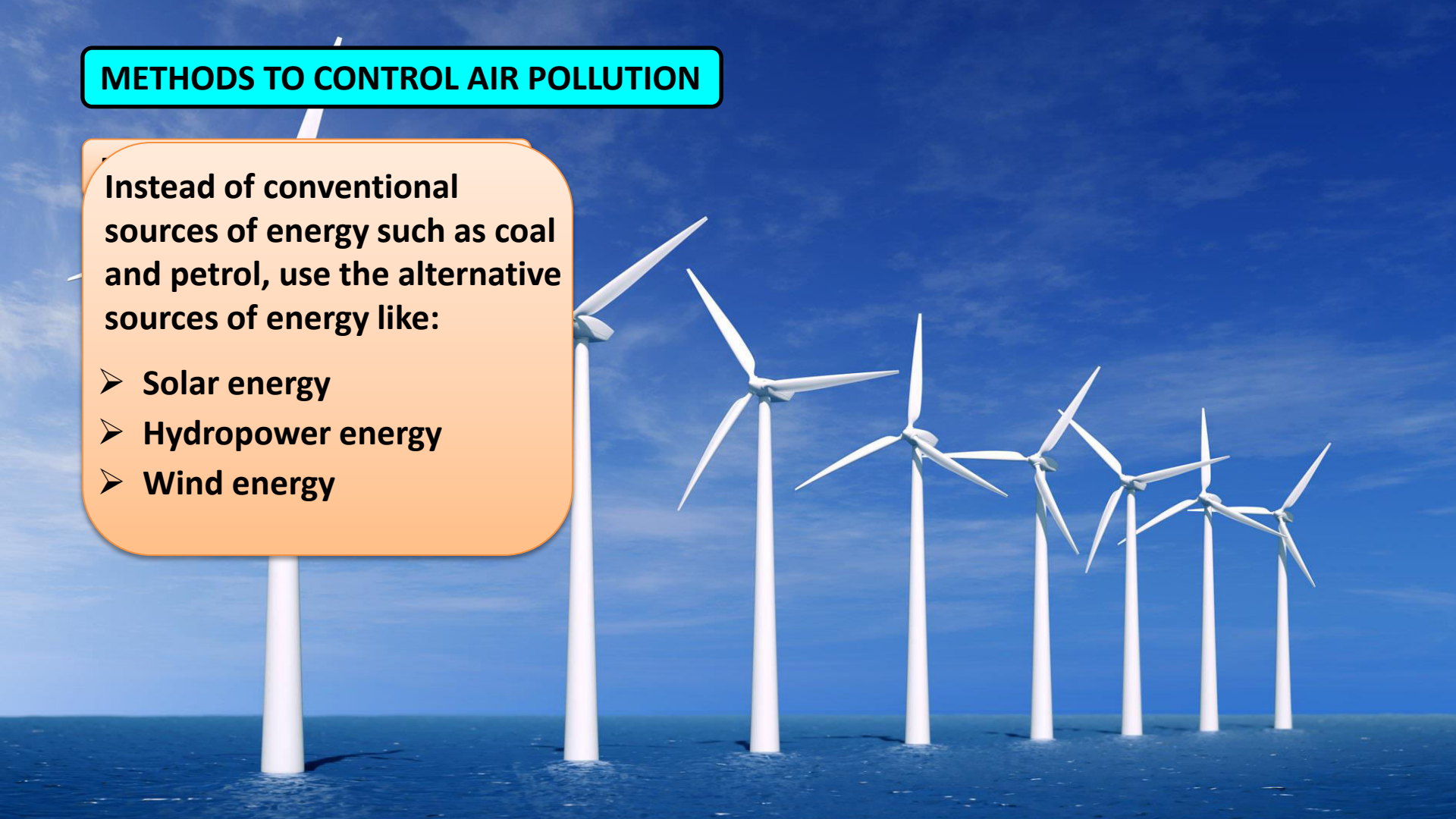
Pollution of air and water

- **Methods to control air pollution**

METHODS TO CONTROL AIR POLLUTION

Use of unleaded petrol in vehicles.

METHODS TO CONTROL AIR POLLUTION



Instead of conventional sources of energy such as coal and petrol, use the alternative sources of energy like:

- Solar energy
- Hydropower energy
- Wind energy

METHODS TO CONTROL AIR POLLUTION

- Install tall chimneys with filters in factories.
- Away from residential areas.

METHODS TO CONTROL AIR POLLUTION

Do not burn dry vegetable wastes rather collect it in a pit and make compost.

Undertake programmers like Van mahotsava.

METHODS TO CONTROL AIR POLLUTION

Enforce strict anti – pollution measures. d ile,
regularly monitor air quality at various locations.

Questions

1. What do you mean by van mohotsav ?
2. What are the ways for minimizing air pollution?
3. What are the alternative sources of energy ?

Pollution of air and water

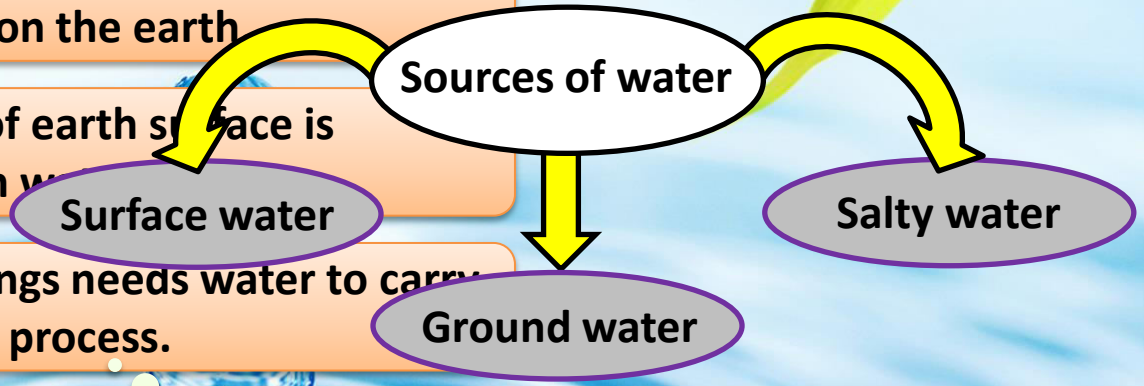
- Water
- Sources of water
- Water pollution
- Sources of water pollution

WATER

Water is one of the most abundant compounds on the earth.

About 75% of earth surface is covered with water.

All living beings needs water to carry out their life process.



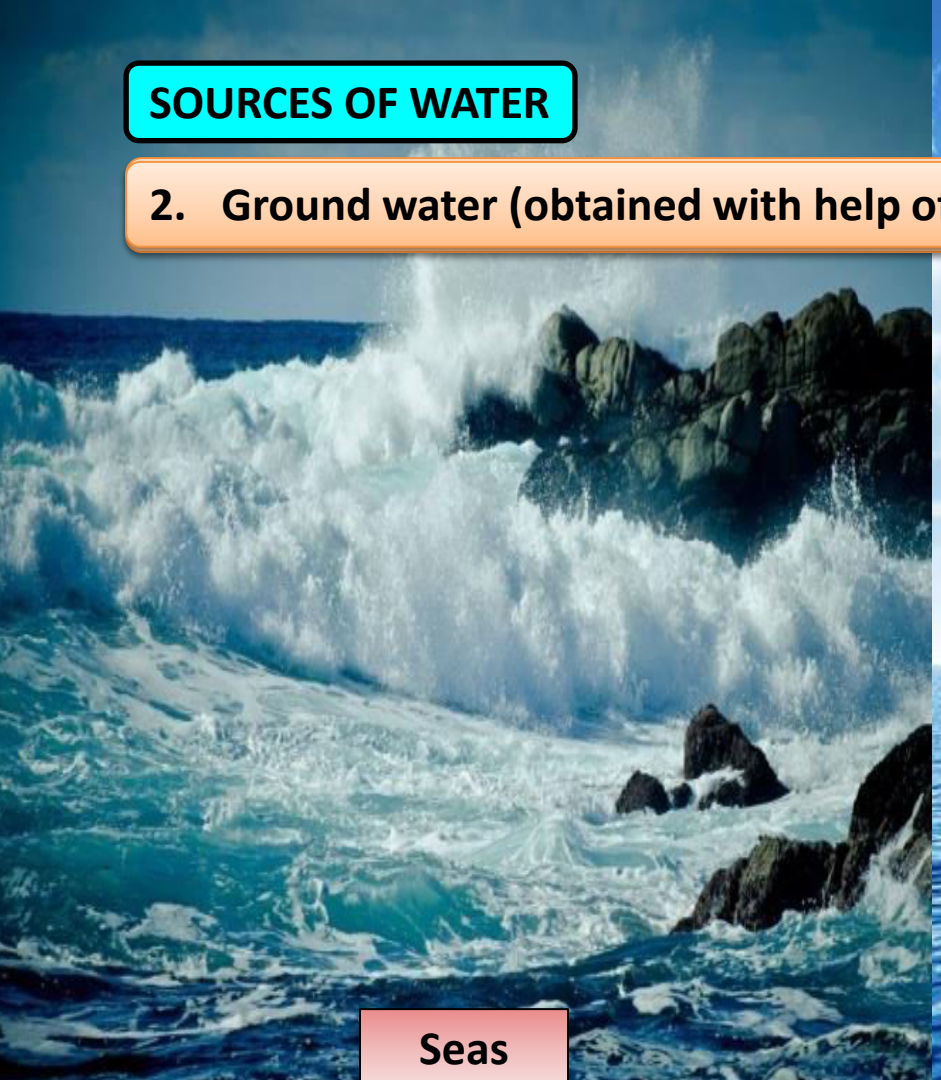
Thus water can also called as supporter of life.

SOURCES OF WATER

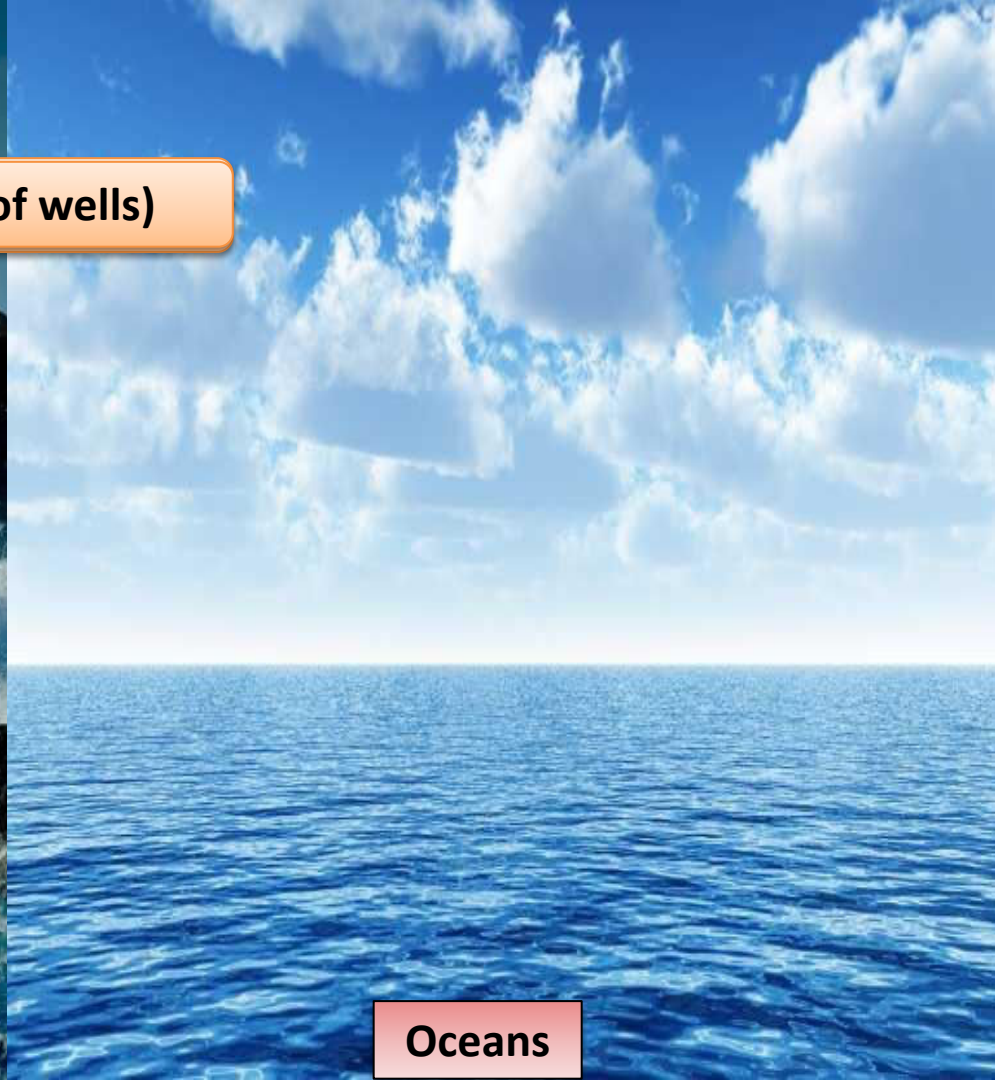
1. Surface water

SOURCES OF WATER

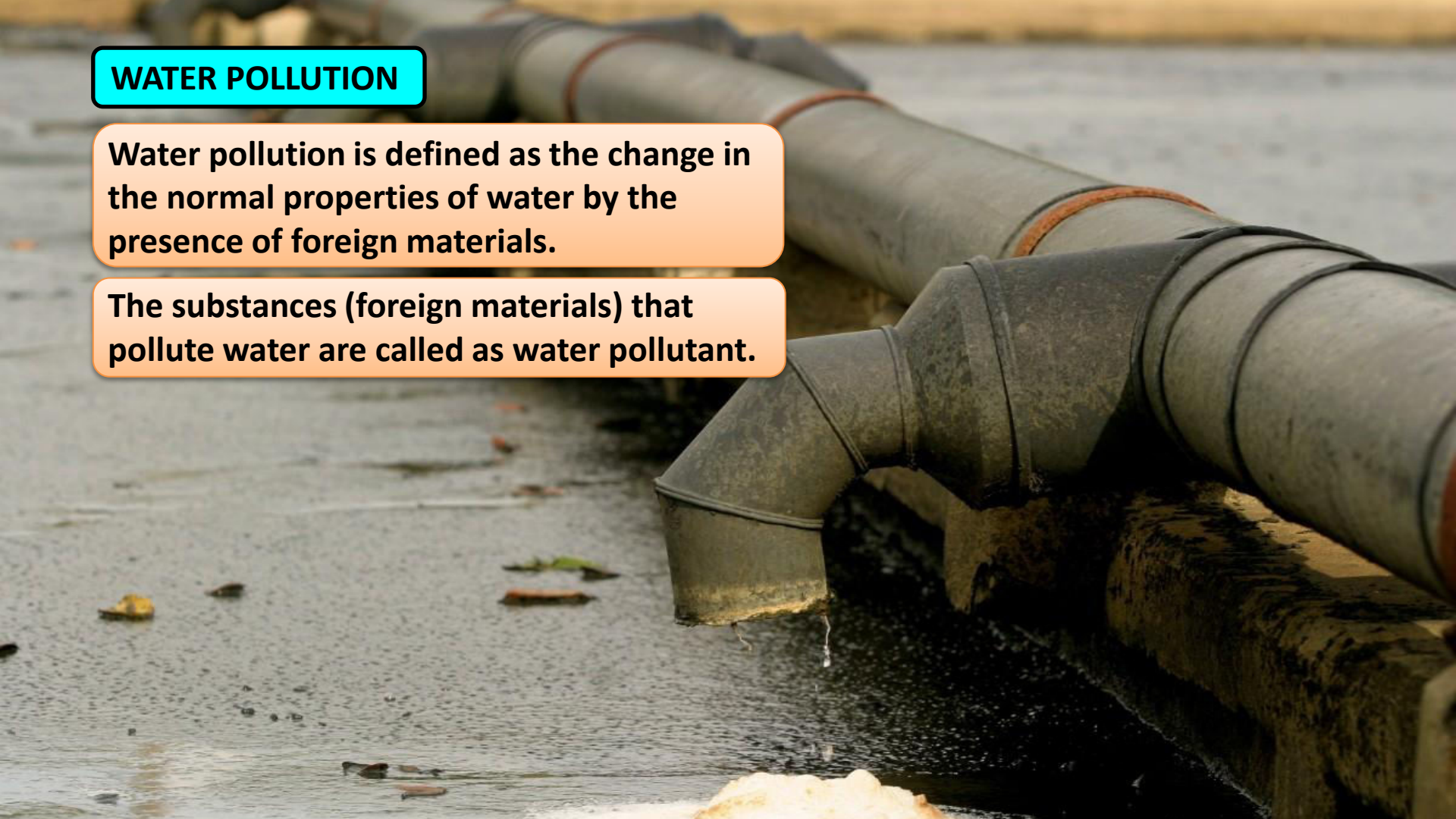
2. Ground water (obtained with help of wells)



Seas



Oceans



WATER POLLUTION

Water pollution is defined as the change in the normal properties of water by the presence of foreign materials.

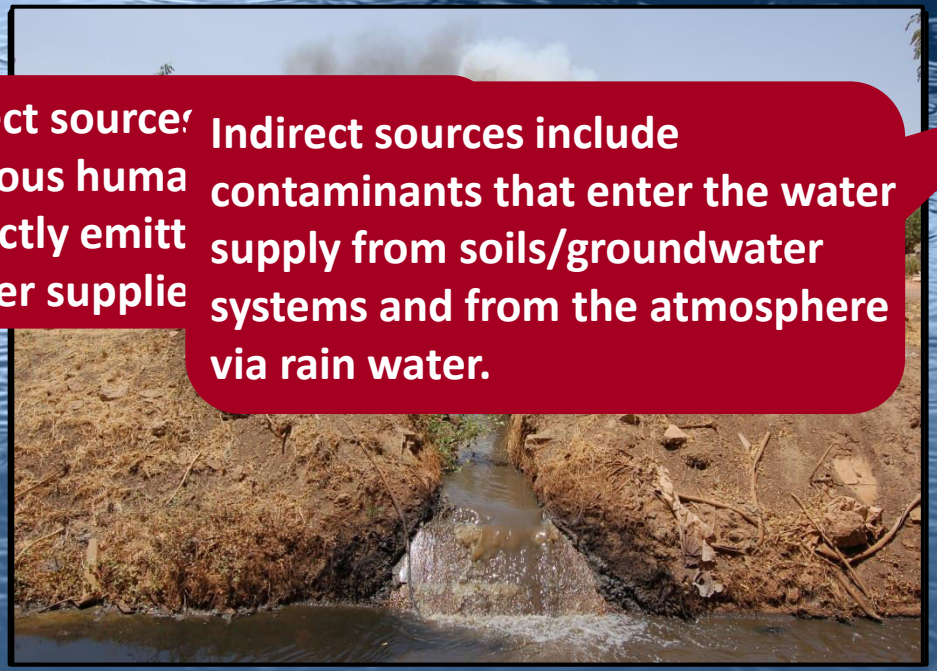
The substances (foreign materials) that pollute water are called as water pollutant.

SOURCES OF WATER POLLUTION

Direct

- Factories
- Refineries
- Water treatment plant

Direct source
various huma
directly emitt
water supplie



Indirect sources include contaminants that enter the water supply from soils/groundwater systems and from the atmosphere via rain water.

Indirect

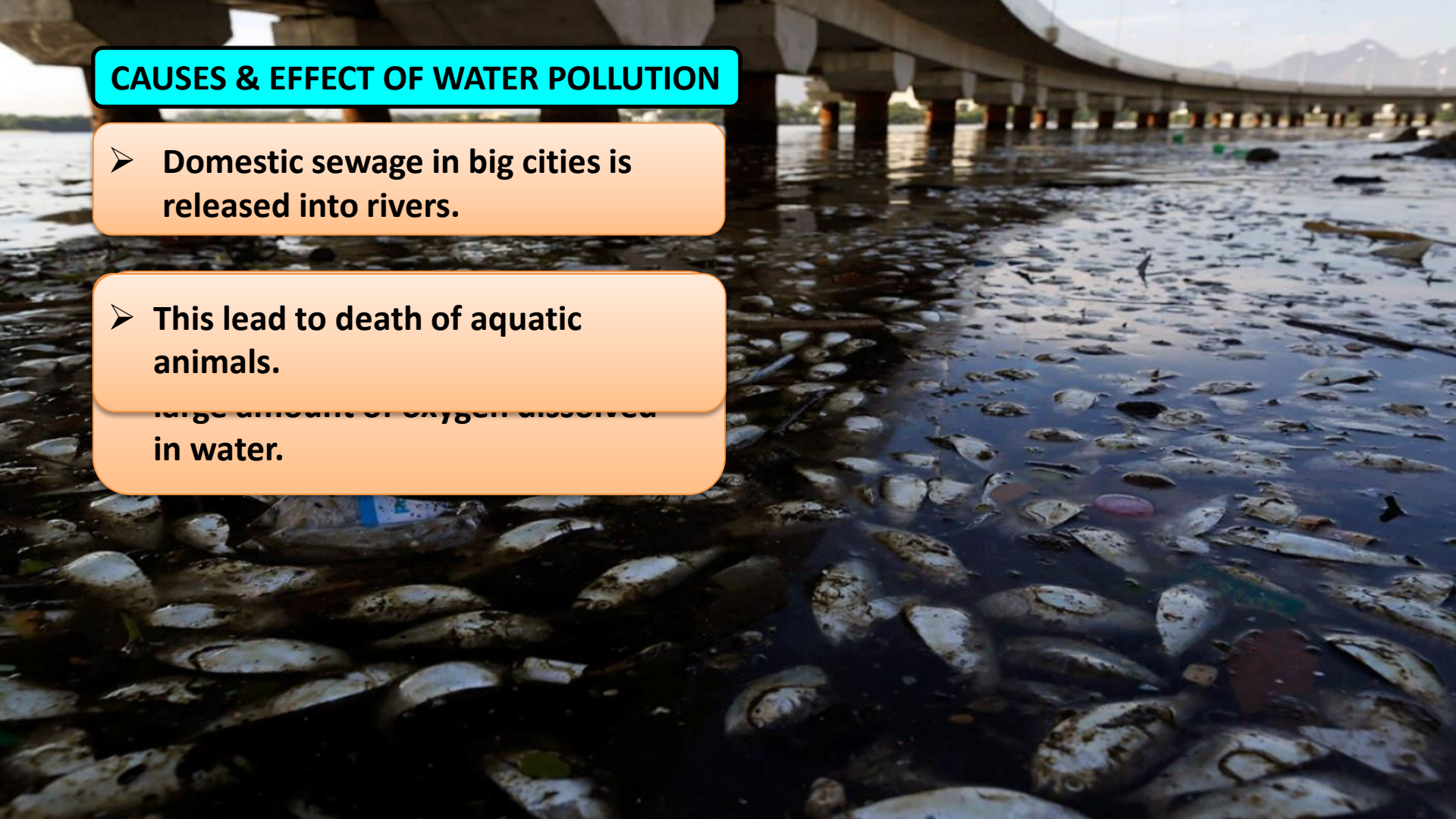
- Agriculture
- Automobiles
- Acid rain

Questions

1. How does water gets polluted?
2. What do you mean by water pollution?
3. Why water is known as the supporter of life?
4. What are the direct sources of water pollution ?

Pollution of air and water

- Causes and effect of water pollution
- Prevention of water pollution
- Potable water



CAUSES & EFFECT OF WATER POLLUTION

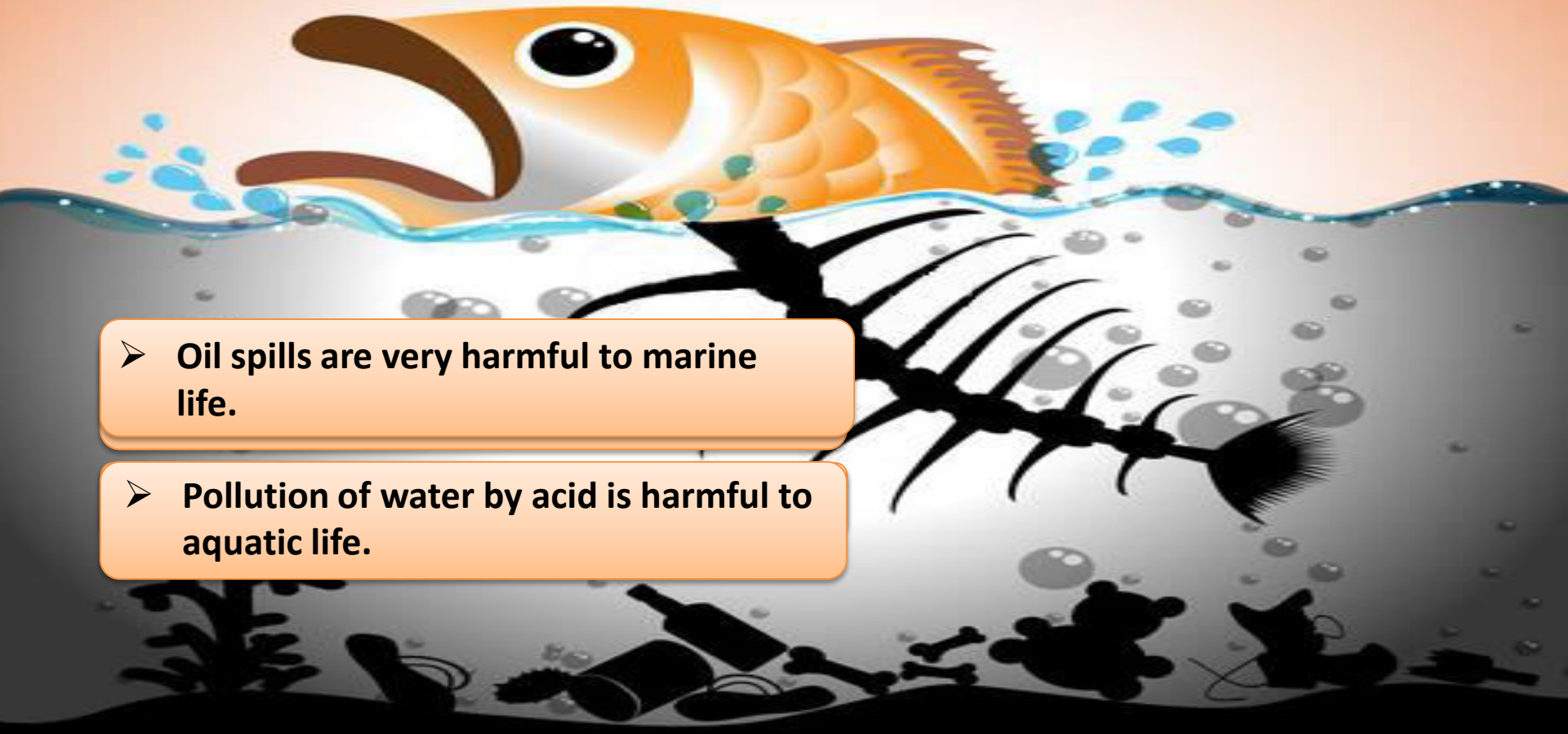
- Domestic sewage in big cities is released into rivers.
- This lead to death of aquatic animals.
- large amount of oxygen dissolved in water.

CAUSES & EFFECT OF WATER POLLUTION

Human activates like bathing and washing

- When this water is used for drinking purpose it harms the human body.

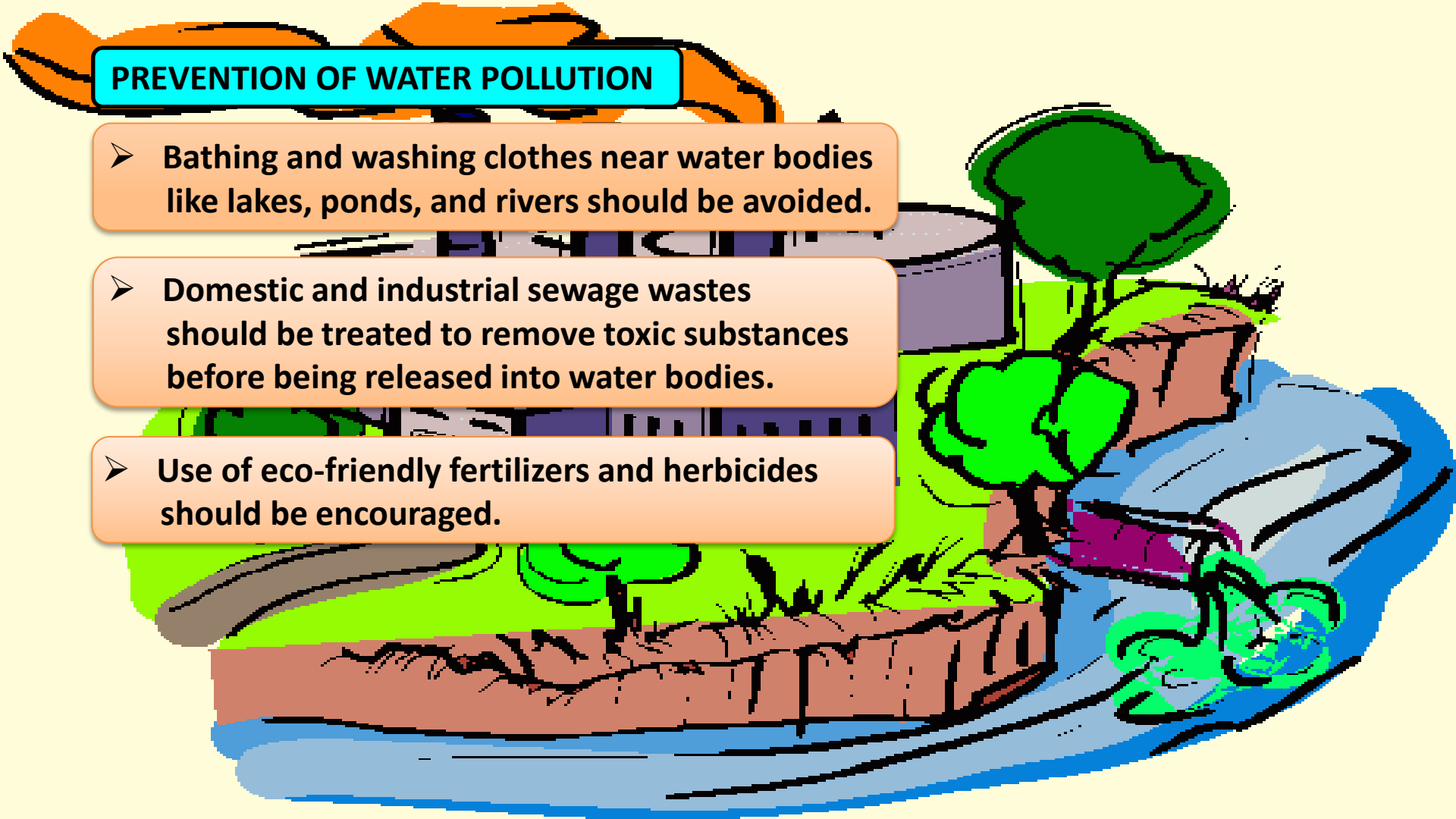
CAUSES & EFFECT OF WATER POLLUTION

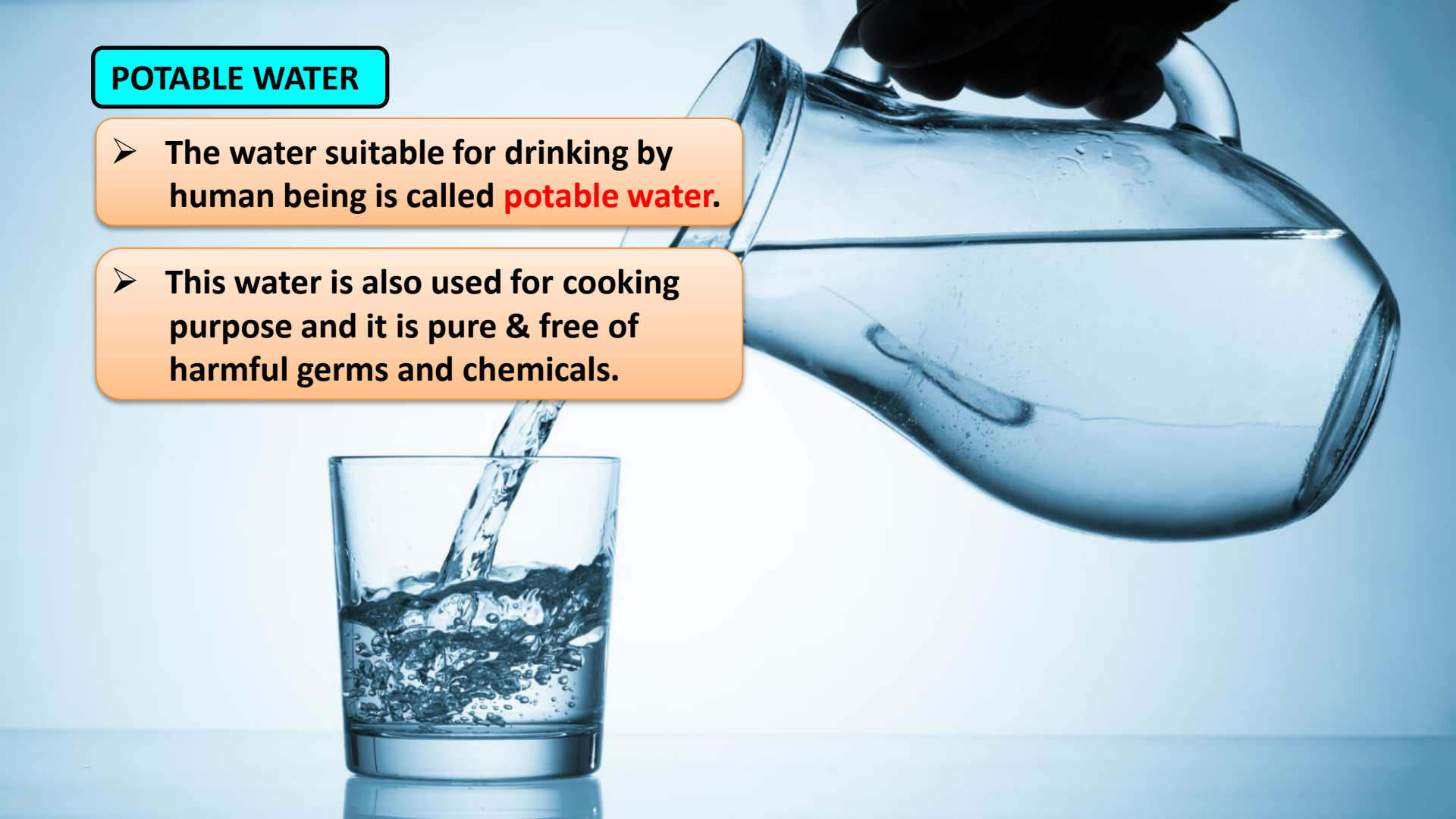


- Oil spills are very harmful to marine life.
- Pollution of water by acid is harmful to aquatic life.

PREVENTION OF WATER POLLUTION

- Bathing and washing clothes near water bodies like lakes, ponds, and rivers should be avoided.
- Domestic and industrial sewage wastes should be treated to remove toxic substances before being released into water bodies.
- Use of eco-friendly fertilizers and herbicides should be encouraged.



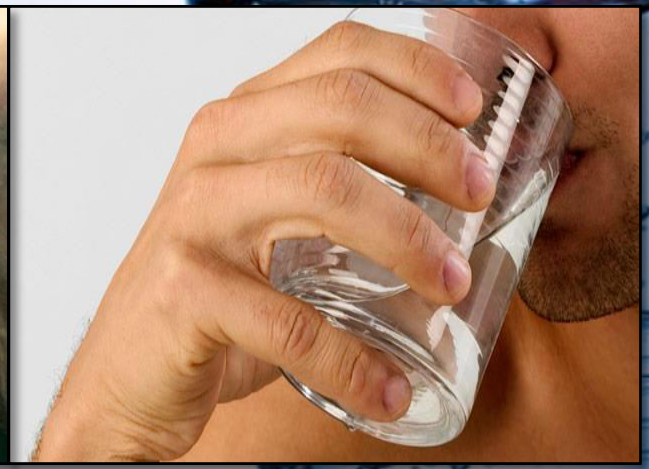


POTABLE WATER

- The water suitable for drinking by human being is called **potable water**.
- This water is also used for cooking purpose and it is pure & free of harmful germs and chemicals.

POTABLE WATER

- It should be free from suspended impurities, harmful chemicals and microorganisms.



Questions

1. How can water pollution be controlled?
2. Define the terms: a) Polluted water
   b) Potable water
3. How human activities cause water pollution?
4. How is aquatic life affected by water pollution ?

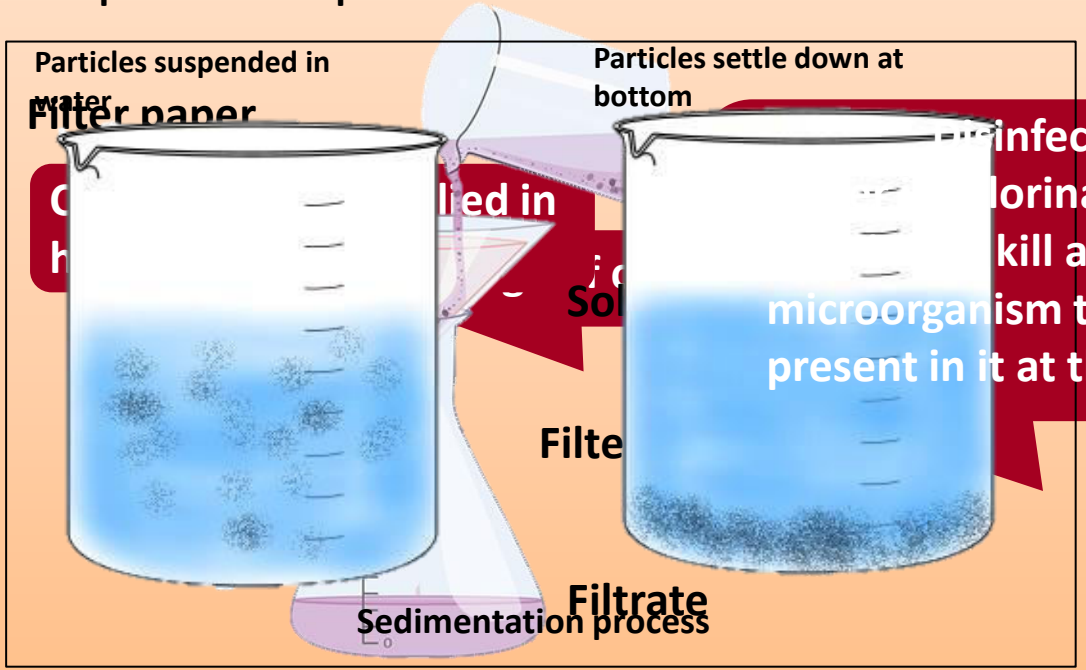
Pollution of air and water

- Purification of water
- Control of water pollution
- Treatment of sewage and industrial waste
- Conservation of water

PURIFICATION OF WATER

Sedimentation

Water is passed through filter beds to remove all the other insoluble impurities. This process is called filtration.



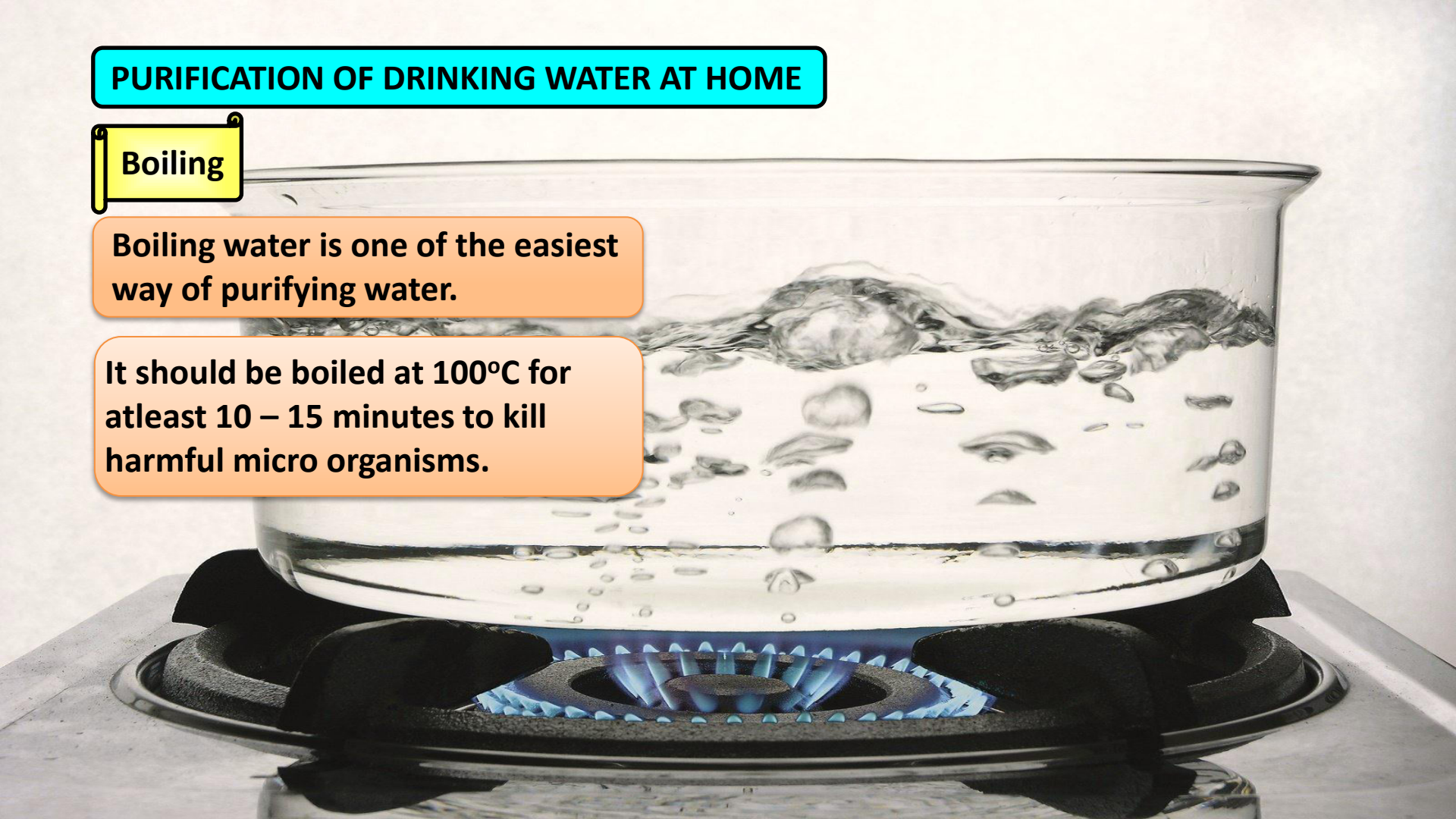
infection
lorinated(by addition of
kill any harmful
microorganism that may be
present in it at this stage.

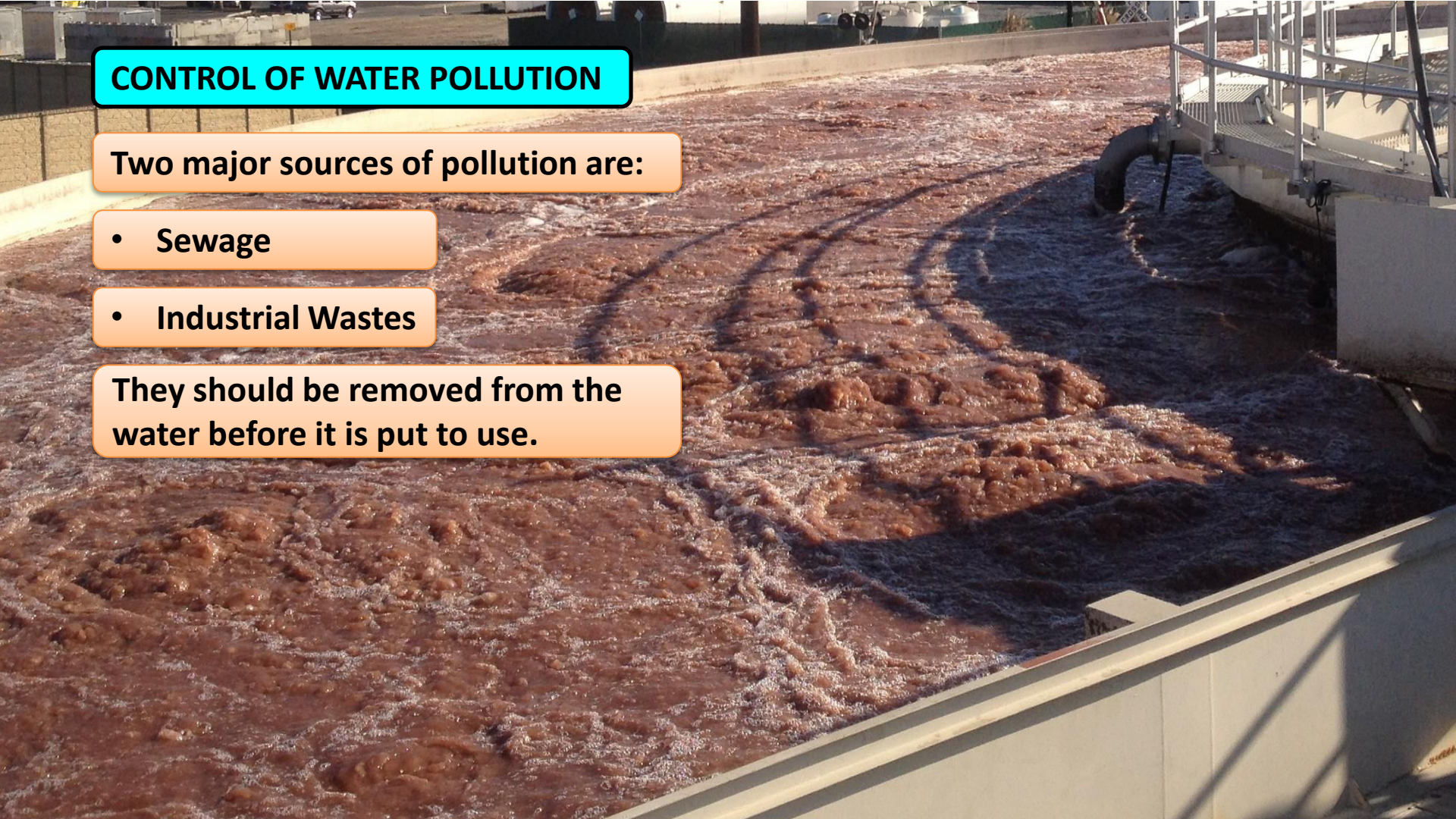
PURIFICATION OF DRINKING WATER AT HOME

Boiling

Boiling water is one of the easiest way of purifying water.

It should be boiled at 100^{o}C for atleast 10 – 15 minutes to kill harmful micro organisms.





CONTROL OF WATER POLLUTION

Two major sources of pollution are:

- Sewage
- Industrial Wastes

They should be removed from the water before it is put to use.

TREATMENT OF SEWAGE

Sewa

The churned sewage is passed into a tank with a ge

Heavier particles settle down.

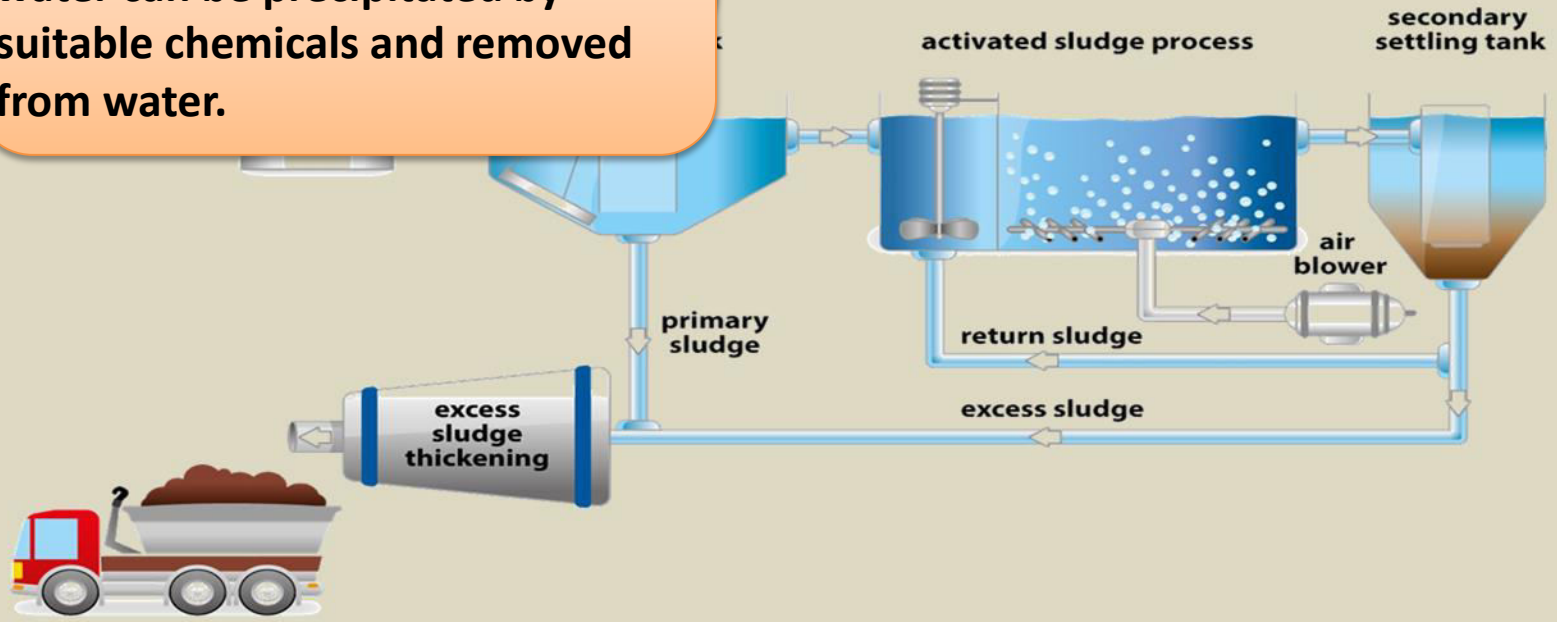
The water flowing down is relative pure.

TREATMENT OF SEWAGE

Water must be sterilised by chlorine. It kills the microbes.

TREATMENT OF INDUSTRIAL WASTE

The chemical substances present in the industrial waste dissolved in water can be precipitated by suitable chemicals and removed from water.

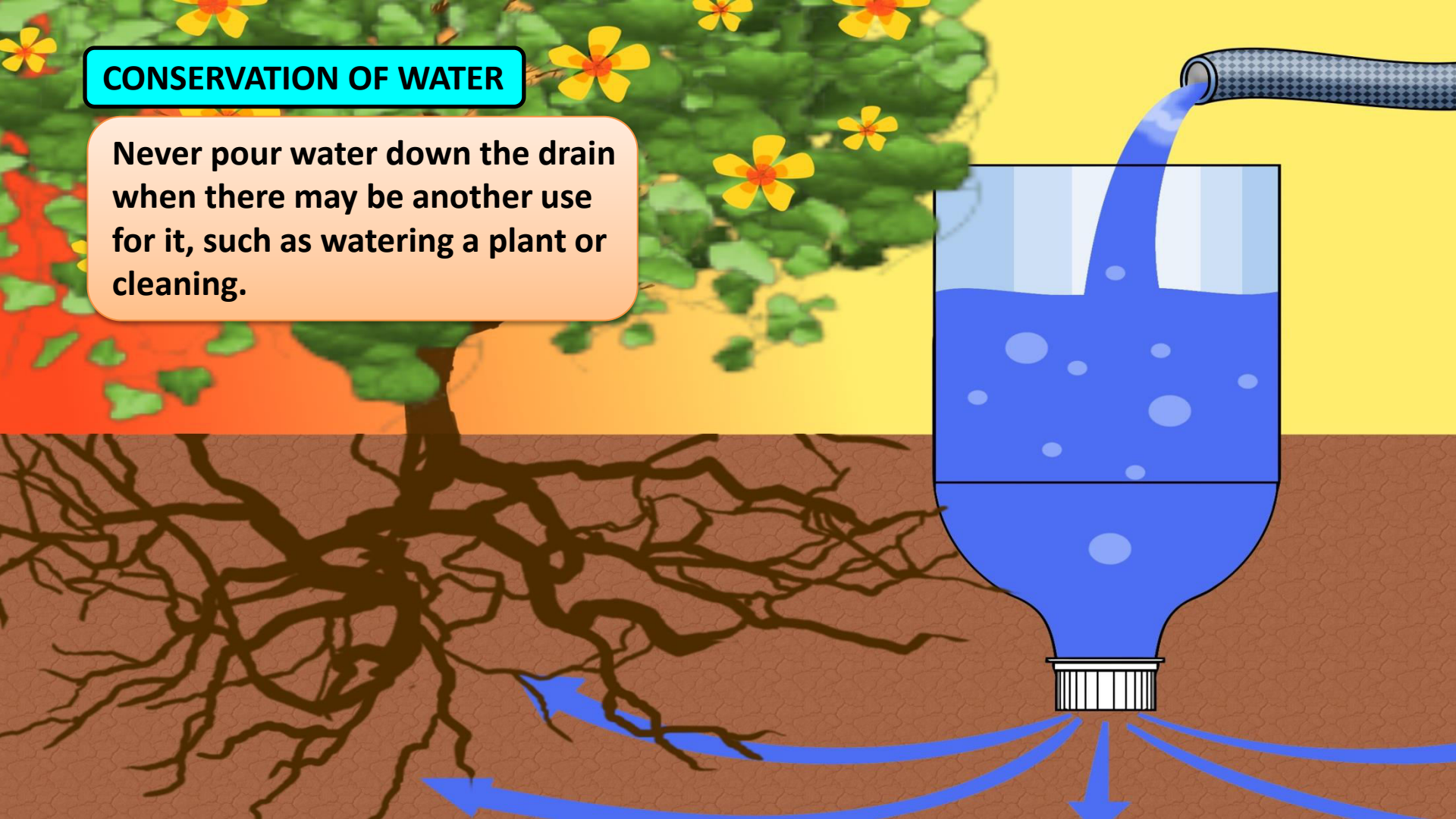


CONSERVATION OF WATER

While brushing your teeth, do not leave the tap open.

CONSERVATION OF WATER

Never pour water down the drain when there may be another use for it, such as watering a plant or cleaning.



Questions

1. How is water purified for drinking purpose?
2. Define the term chlorination.
3. State the methods for the conservation of water.
4. How can water pollution be controlled?

Thank You