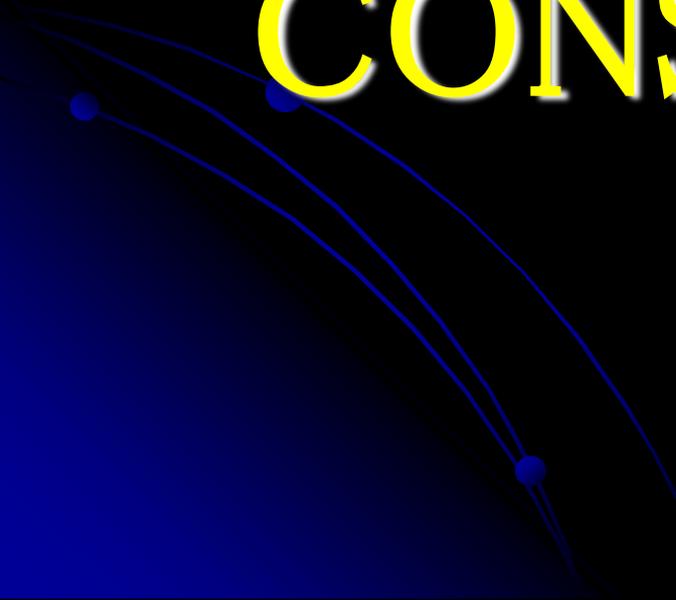
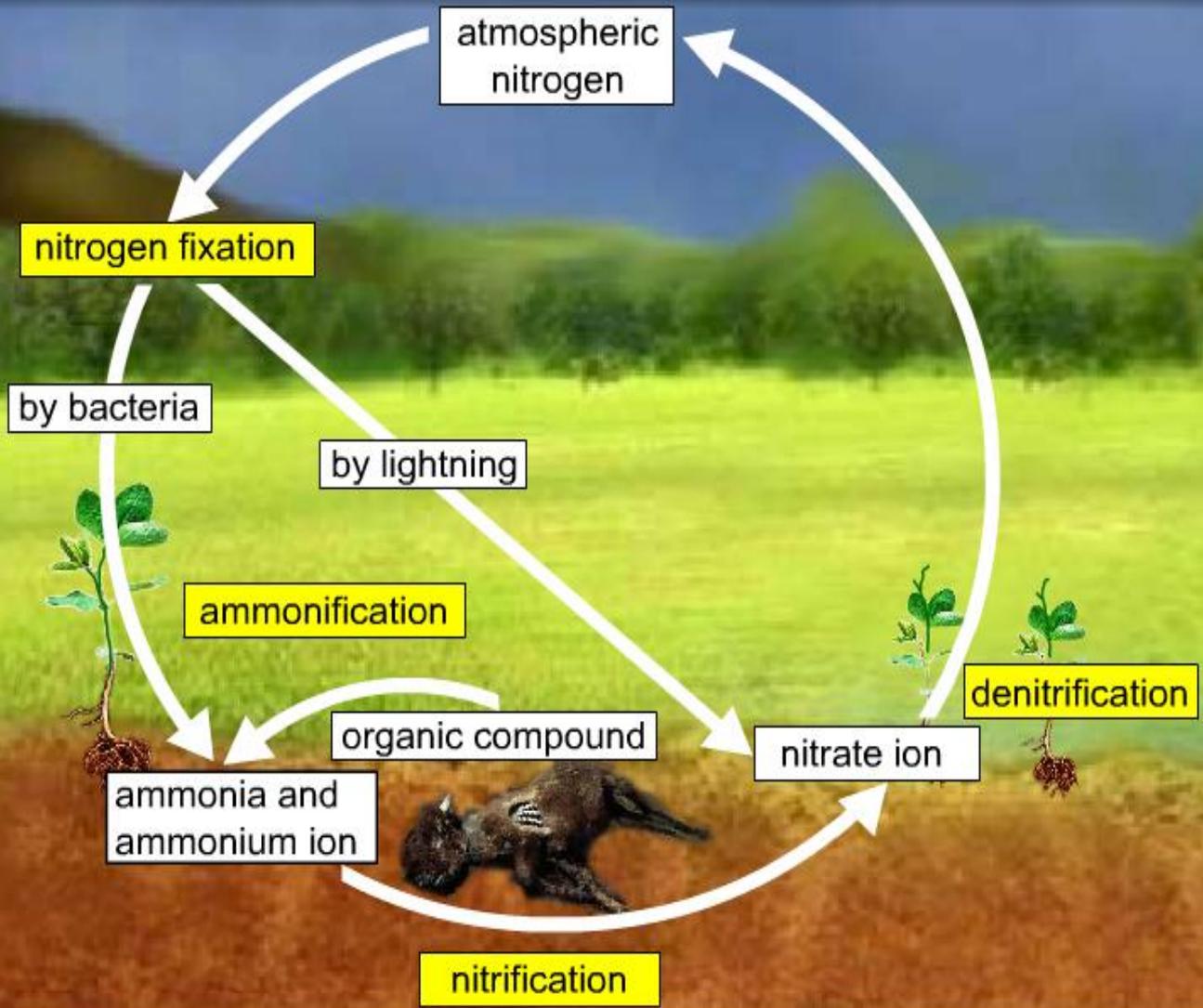


PRESERVATION AND CONSERVATION

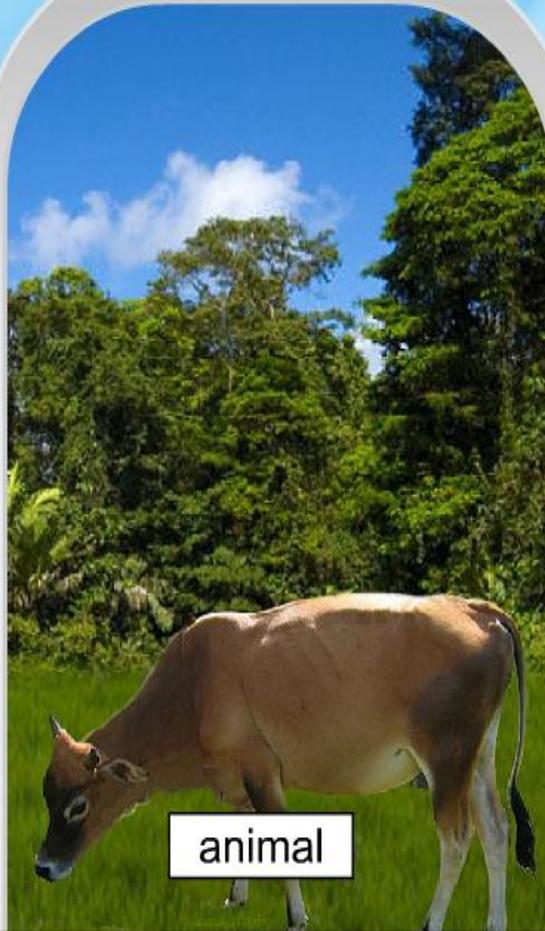


Nitrogen Cycle





plant

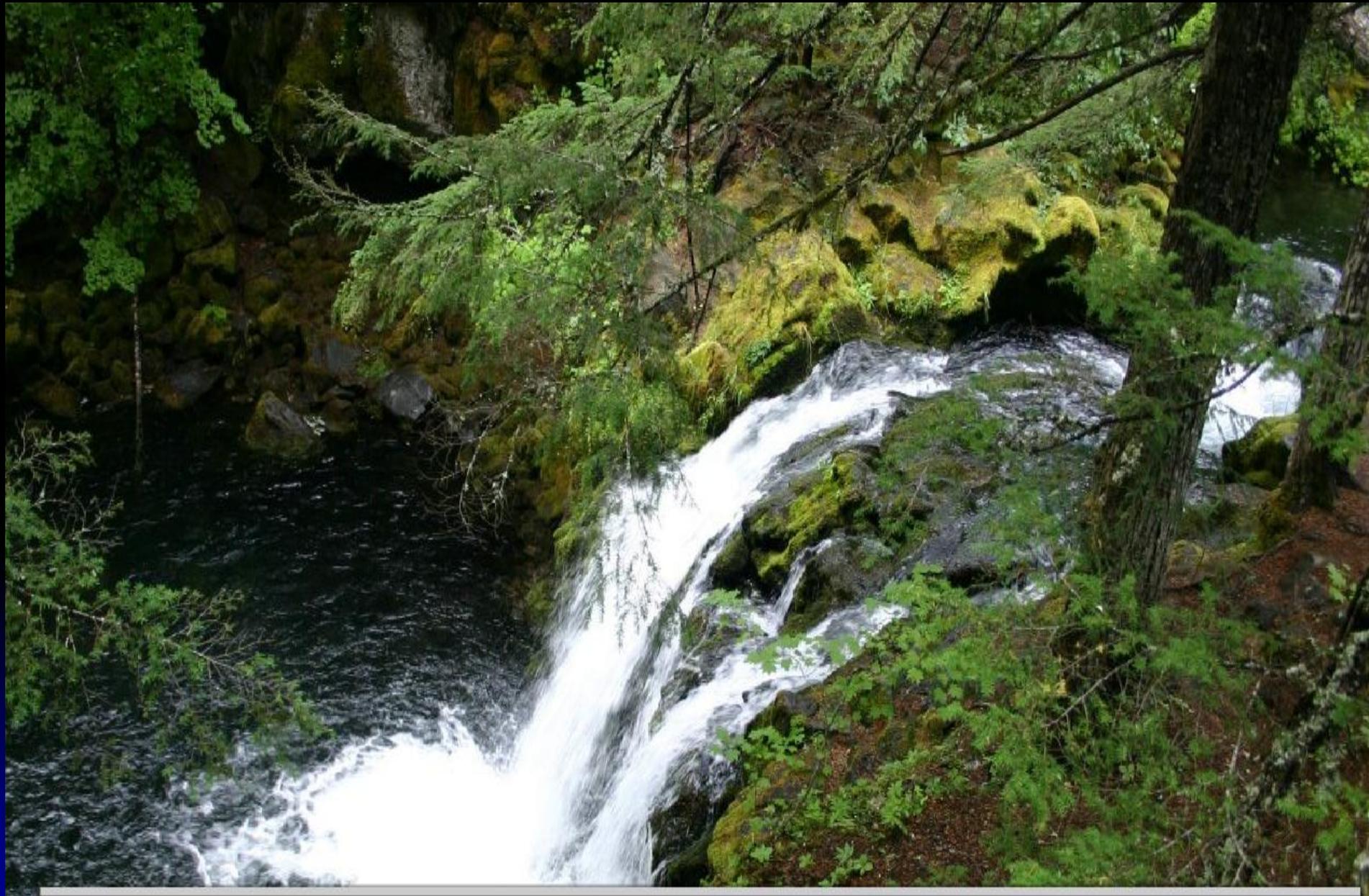


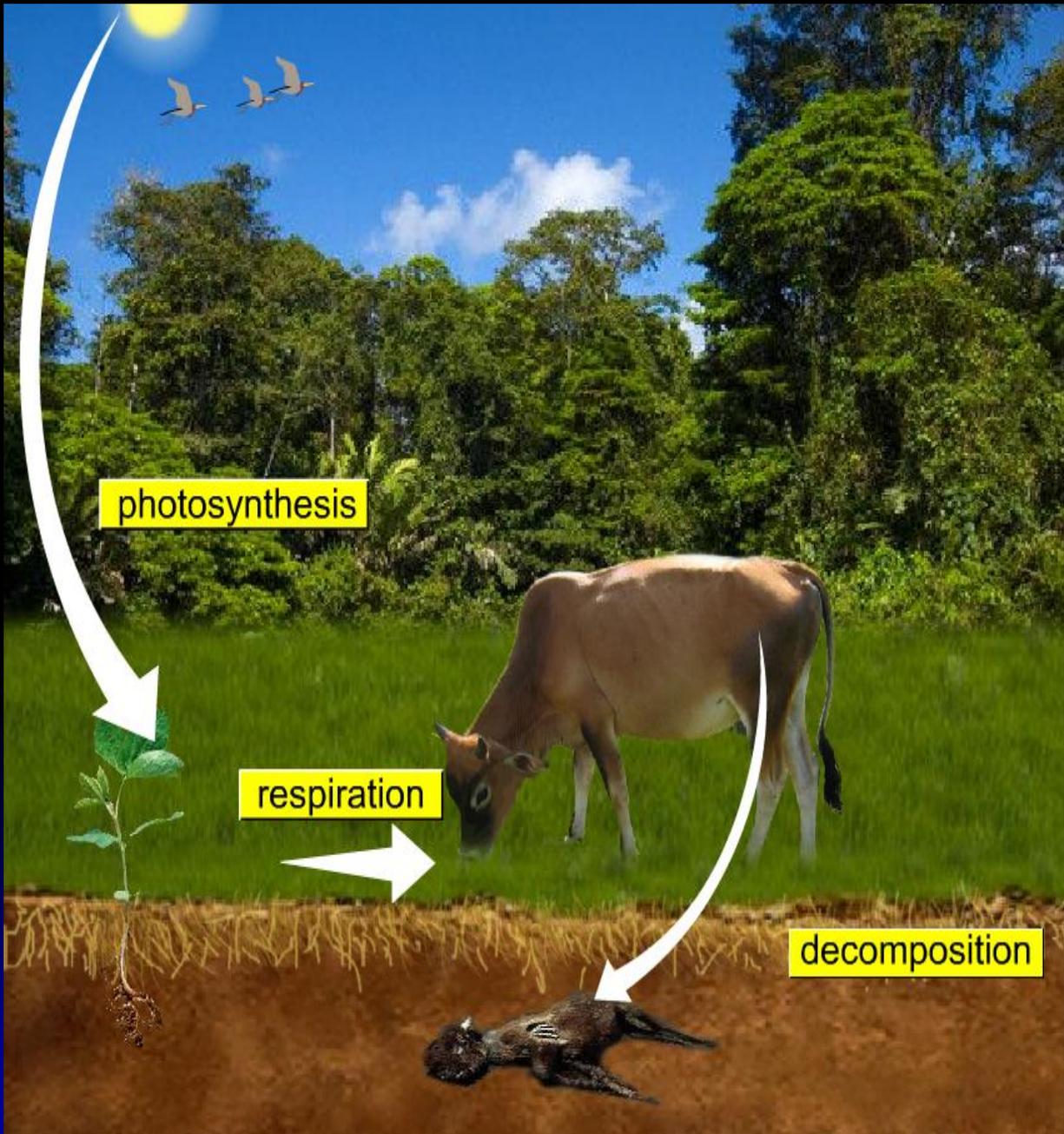
animal



human

These nutrients are also recycled in nature to maintain their balance.





Plants are the source of food for animals.

Animals use oxygen for respiration.

When living organisms like plants, animals and human beings die, they decompose in the soil.

The decomposition process takes place with the help of microorganisms in the soil.

During decomposition nutrients are released into the soil.

BALANCE IN NATURE

1. A Habitat is an area where a group of organisms live
 2. A community is a group of animals nor plants that live together in a habitat
 3. An ecosystem is a system formed by the interaction of animals and plants with the habitat
- 

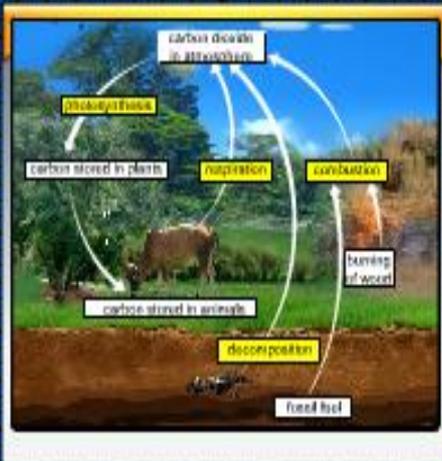
BALANCE IN NATURE

4. Balance in nature is an **interaction between biotic and a biotic** components to form a system that can **support the habitat**

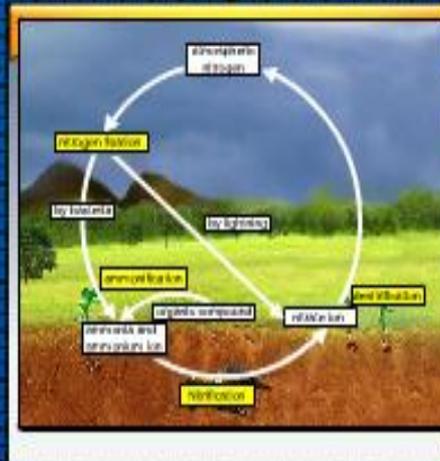
5. Natural Cycles such as :

- a. **Water cycle**
- b. **Carbon cycle**
- c. **Nitrogen cycle**

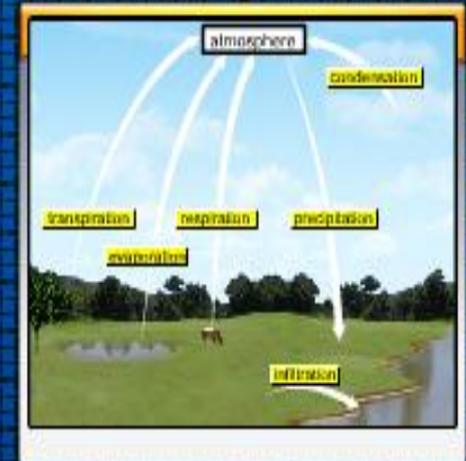
Natural cycles



Carbon cycle



Nitrogen cycle



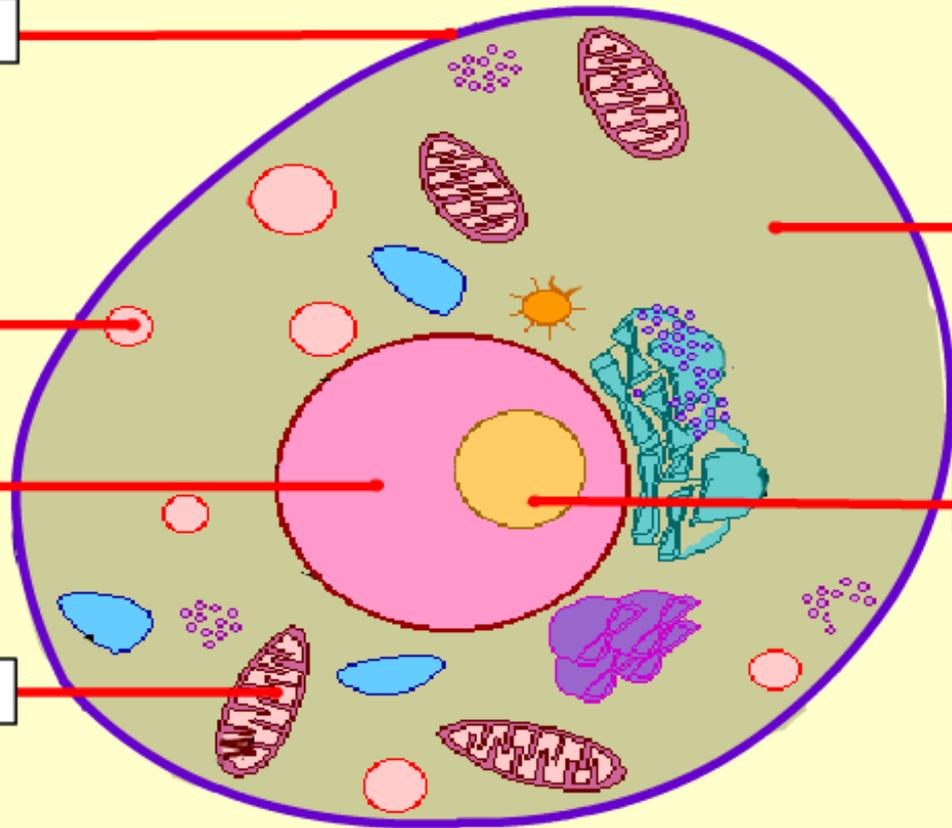
Water cycle

cell membrane

lysosome

nucleus

mitochondrion

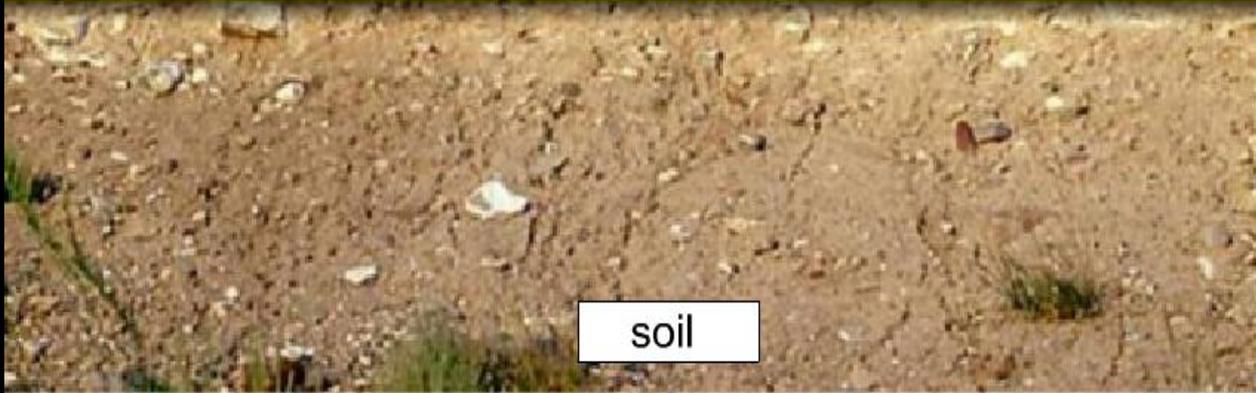


cytoplasm

nucleolus

animal cell

Natural Cycles



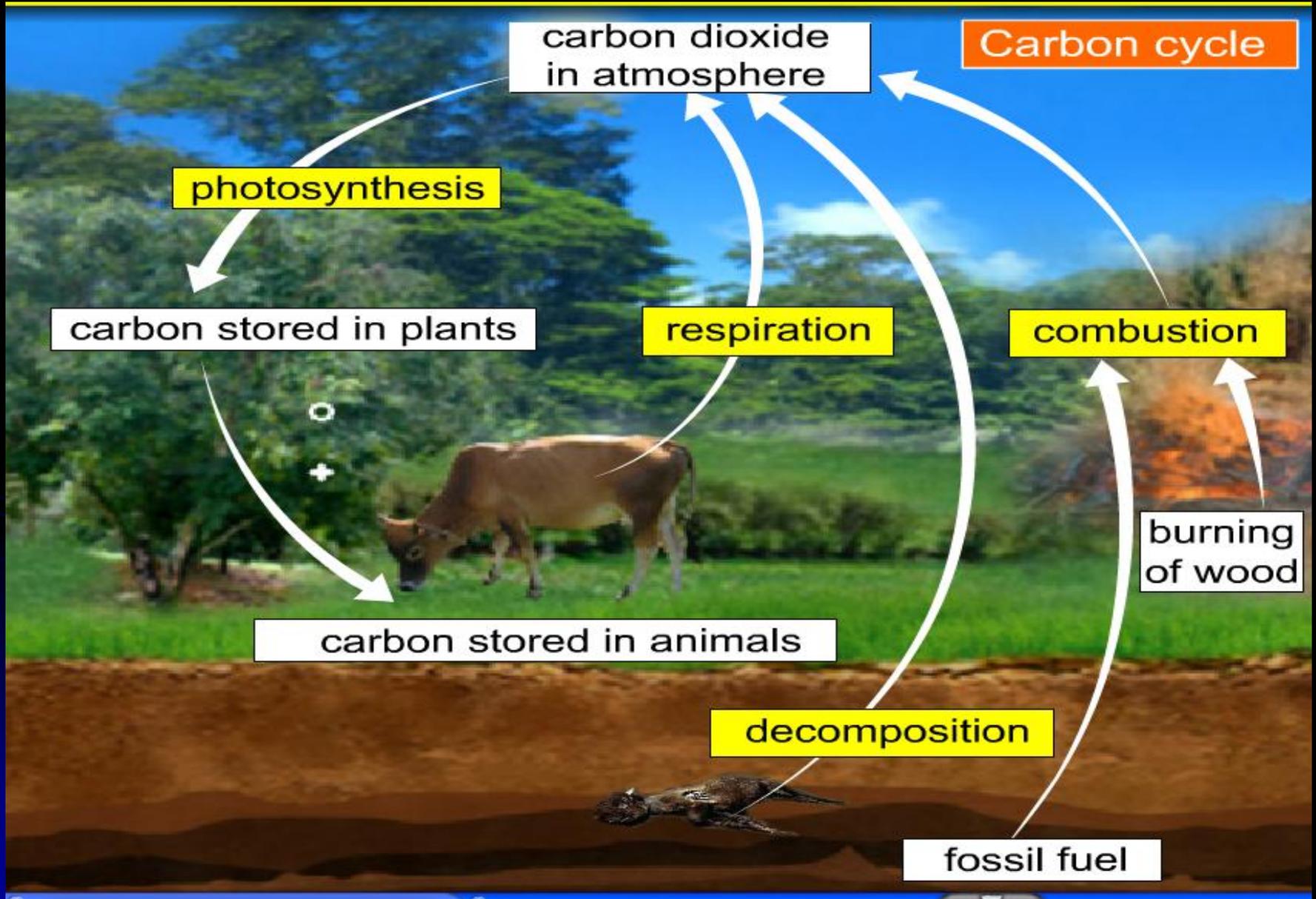
There are many nutrients which are essential for the growth of plants, animals and human beings.

In order to maintain life, nature has to recycle the nutrients constantly on Earth.

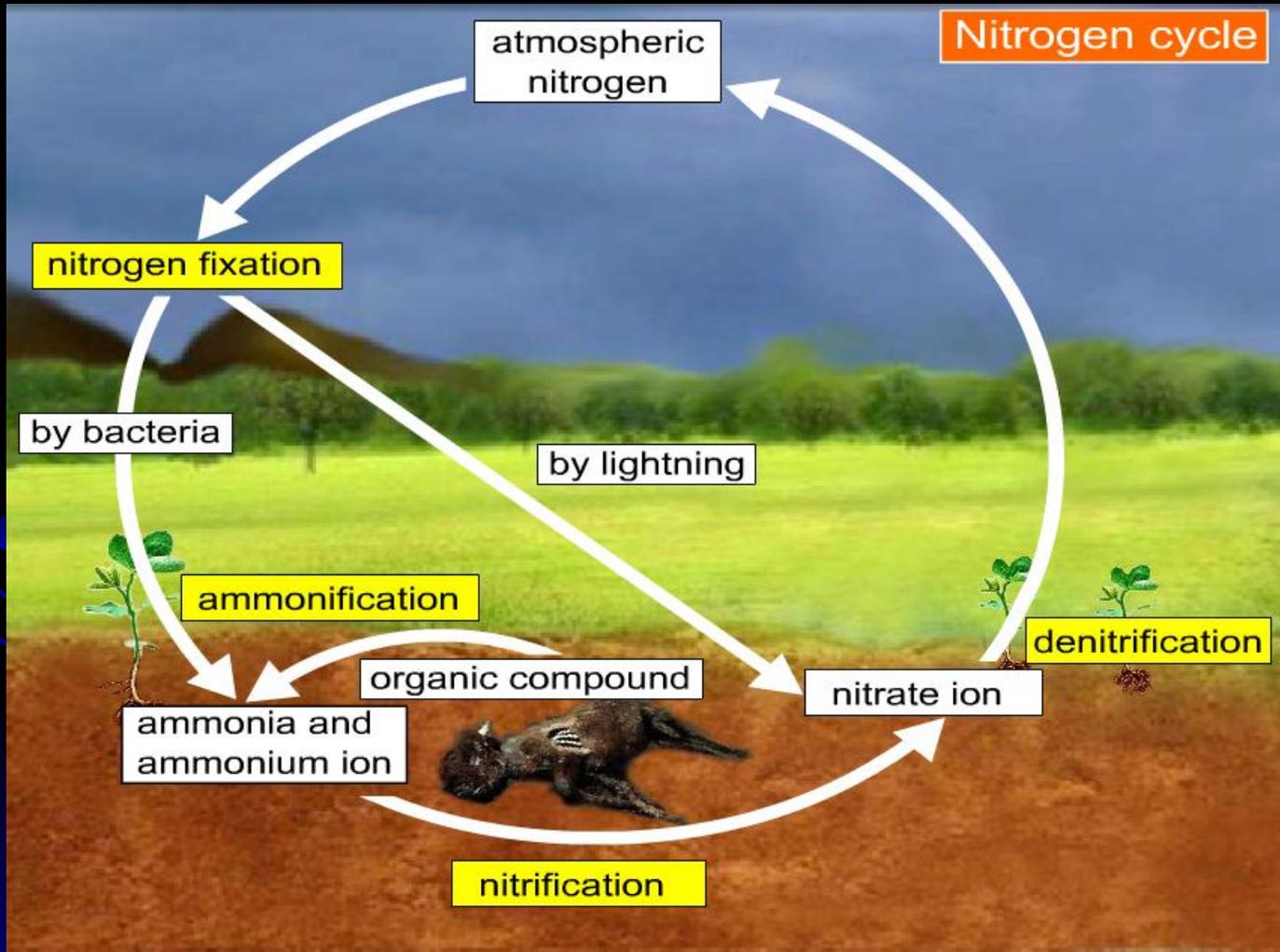
Carbon, nitrogen and water are particularly important to organisms because they involve materials used to make the chemical components of cells.

Carbon, nitrogen, and other nutrients move through air, soil and water in a cycle.

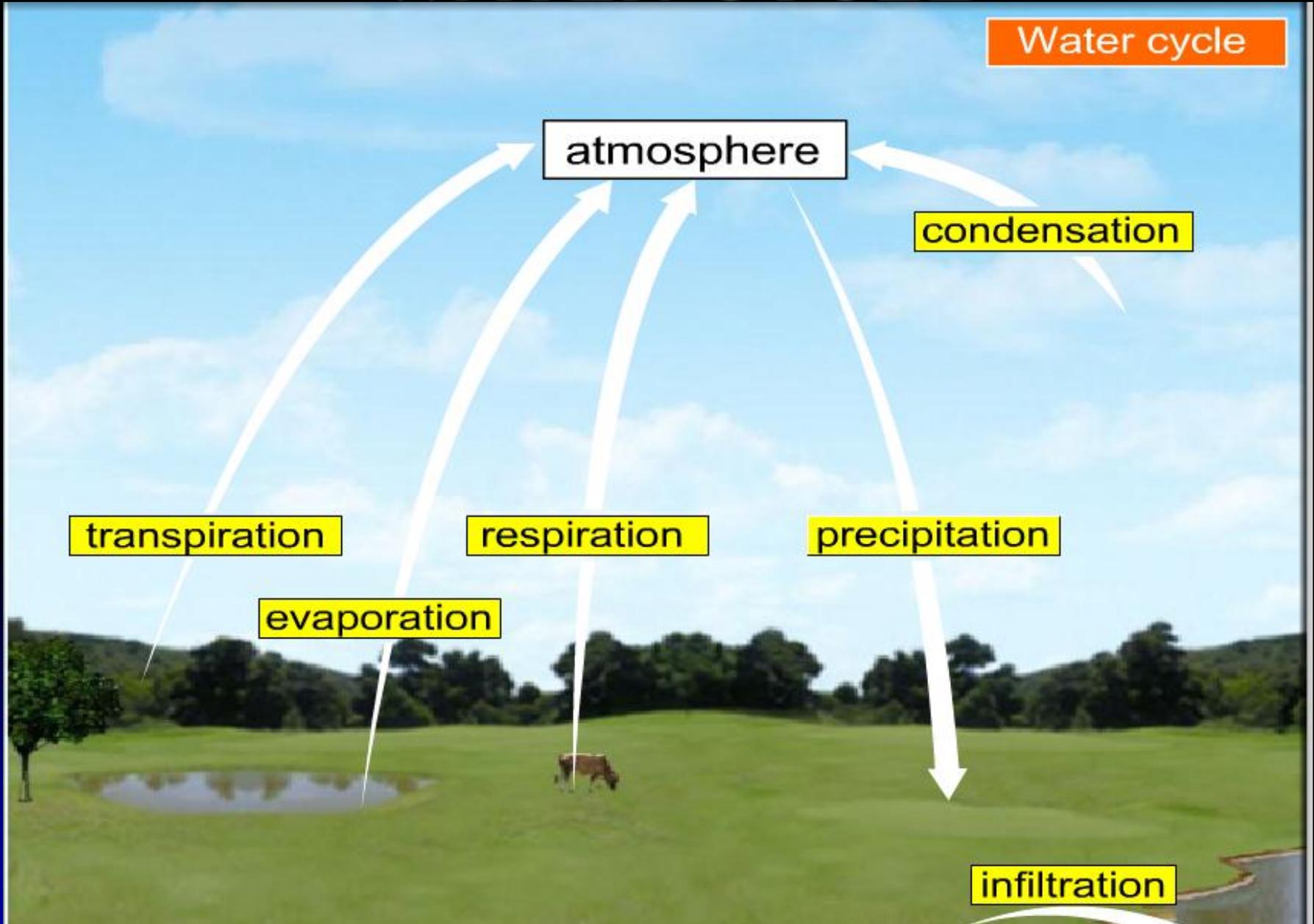
CARBON CYCLE



NITROGEN CYCLE

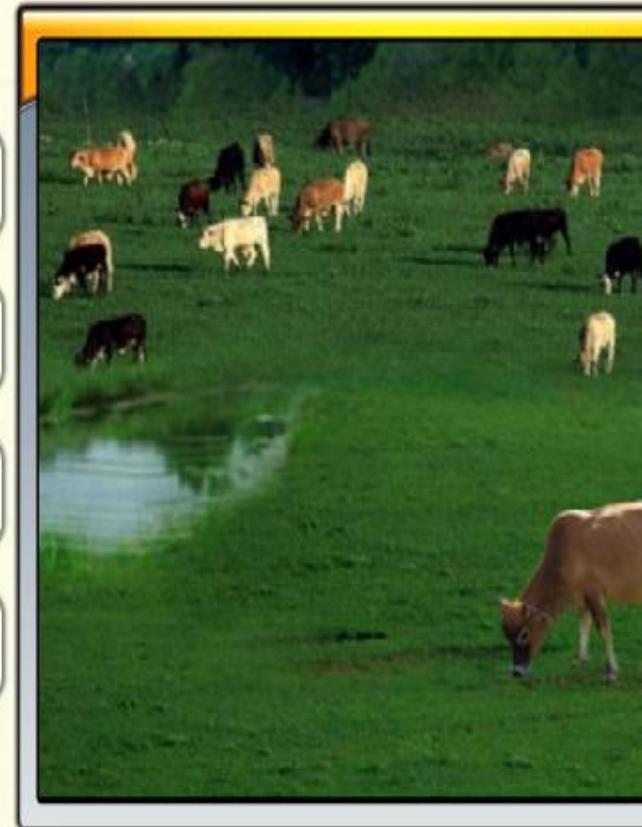


WATER CYCLE



1. What is the purpose of interaction of organisms among themselves as well as with their surroundings?

- A** To increase the types of organisms.
- B** To control the population of organisms.
- C** To keep the ecosystems in nature balanced.
- D** To encourage the competition within organisms.



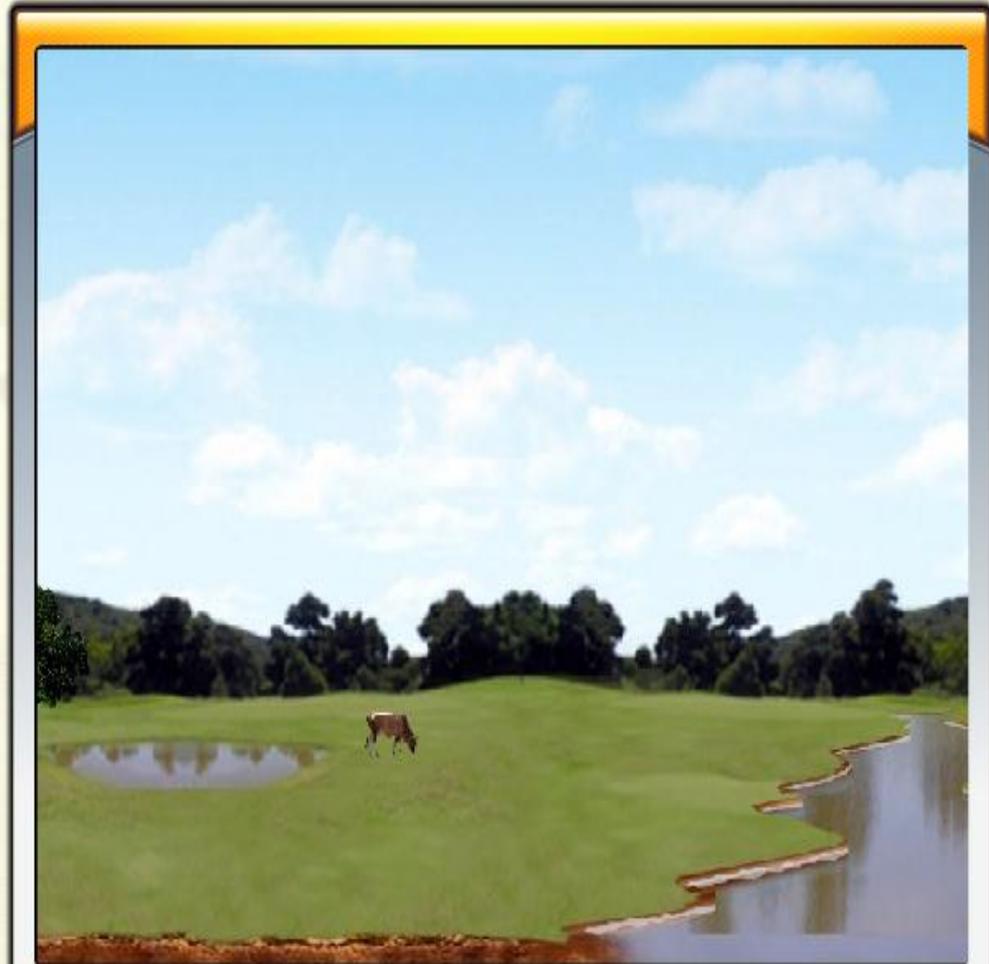
2. Which of the following is not a process of the water cycle?

A Condensation

B Nitrification

C Evaporation

D Infiltration

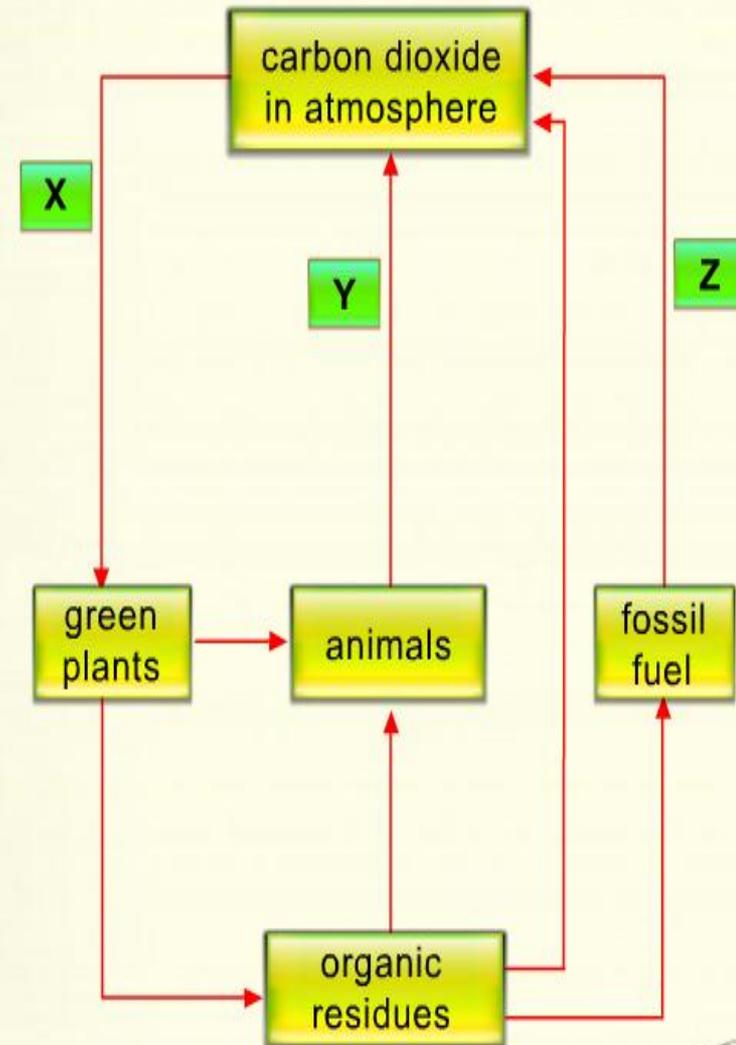


3. The figure shows the carbon cycle in nature.

Which of the following is correct regarding processes X, Y and Z?



- A** Photosynthesis Decaying Respiration
- B** Photosynthesis Respiration Combustion
- C** Respiration Combustion Photosynthesis
- D** Respiration Decaying Combustion



FOOD CHAIN AND FOOD WEBS







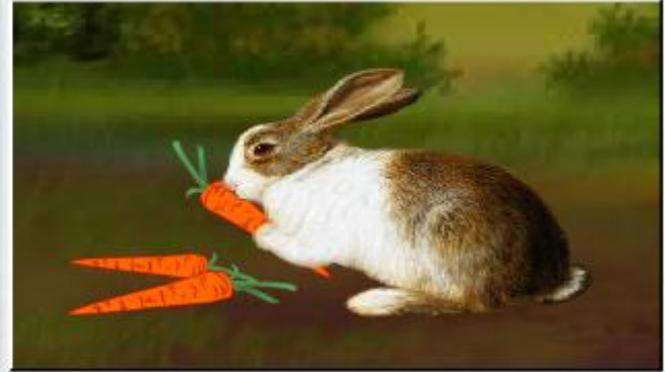
What would happen if plants are destroyed?
Animals and human beings would suffer from food shortage.







producer

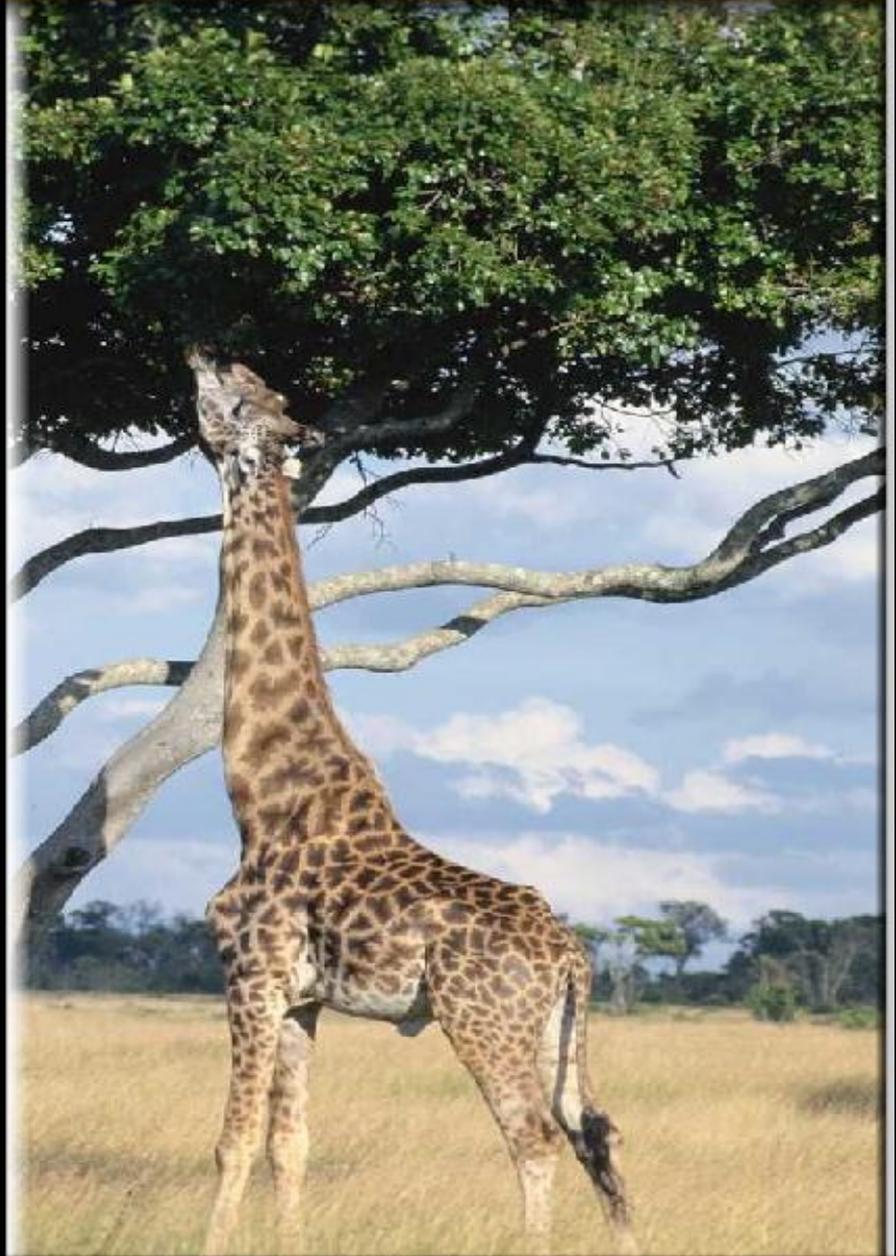


primary consumer



secondary consumer

Consumer



FOOD CHAIN AND FOOD WEB

1. Plants are known as **PRODUCER** because they are able to make their own food through **PHOTOSYNTHESIS**
2. Animals are **consumer** because they cannot make their own food
3. **Food chain is a series of living things each of which is eaten by the next line**
4. **Food web is a series of interlinked food chain**
5. There are three types of consumer which are **primary consumer, secondary consumer and tertiary consumer**

FOOD CHAIN



producer



primary consumer



tertiary consumer



secondary consumer



primary consumer



secondary consumer



Food Web





tertiary consumer



secondary consumer



primary consumer



producer

What would happen if there were too many primary consumers in the ecosystem?

The producers, just like the food source would gradually deplete.

The primary consumers will then experience food shortage.

Some of them would die.

How would the consequences of these situations affect secondary and tertiary consumers?

The population of secondary consumers will decrease.

EXERCISE

1. Which of the following statements are true?

I. Paddy is a producer.

II. Frogs are the primary consumers.

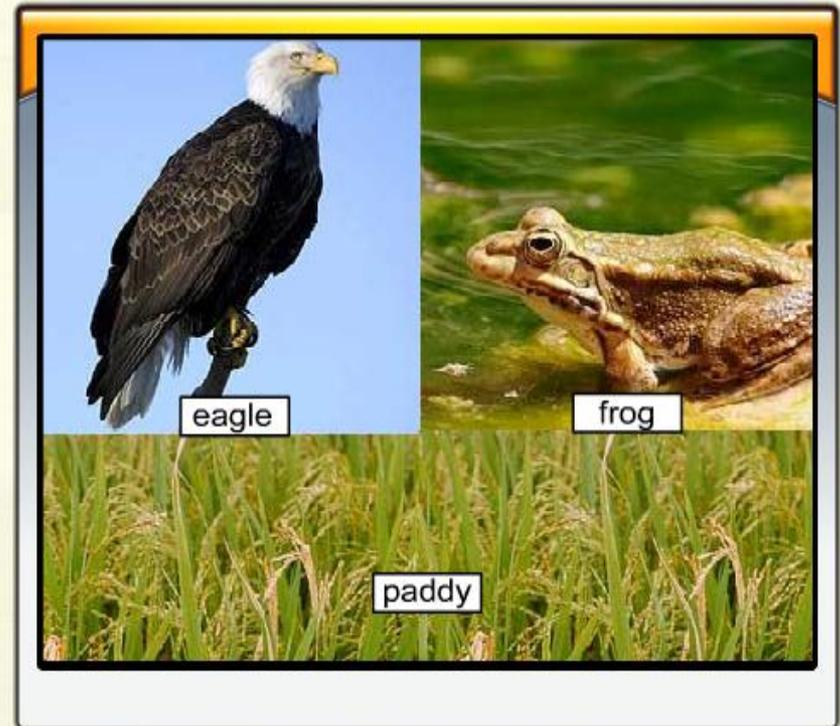
III. Eagles are the tertiary consumers.

A I and II

B II and III

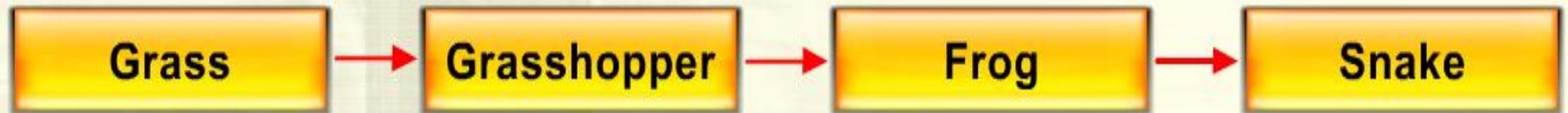
C I and III

D I, II and III

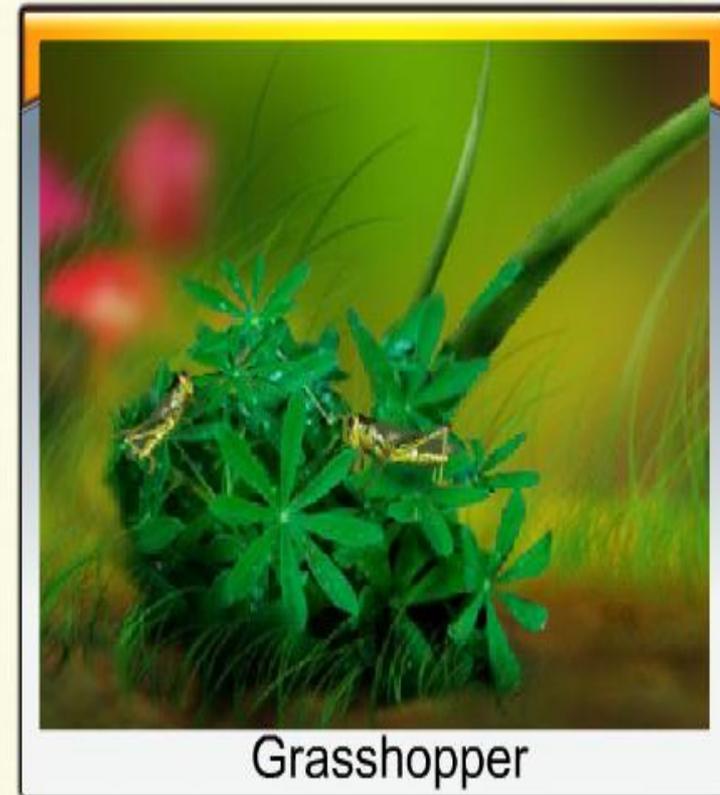


2. The diagram shows a food chain.

What will happen if the grasshopper population depletes?



	Grass yield	Frog population
A	Increases	Increases
B	Decreases	Increases
C	Decreases	Decreases
D	Increases	Decreases



3. The figure represents a food web in an ecosystem.
Which of the following statements are true?

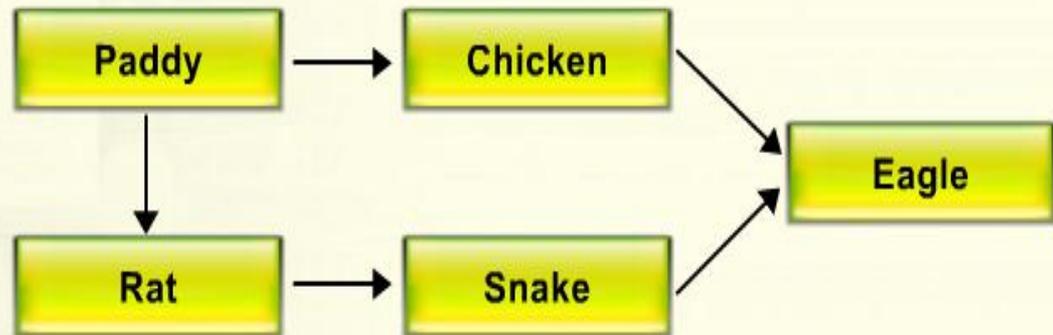
- I. Paddy is a producer.
- II. Eagle is a tertiary consumer.
- III. Snake is a secondary consumer.
- IV. Rat and chicken are primary consumers.

A I and IV only

B I, III and IV only

C II, III and IV only

D I, II, III and IV



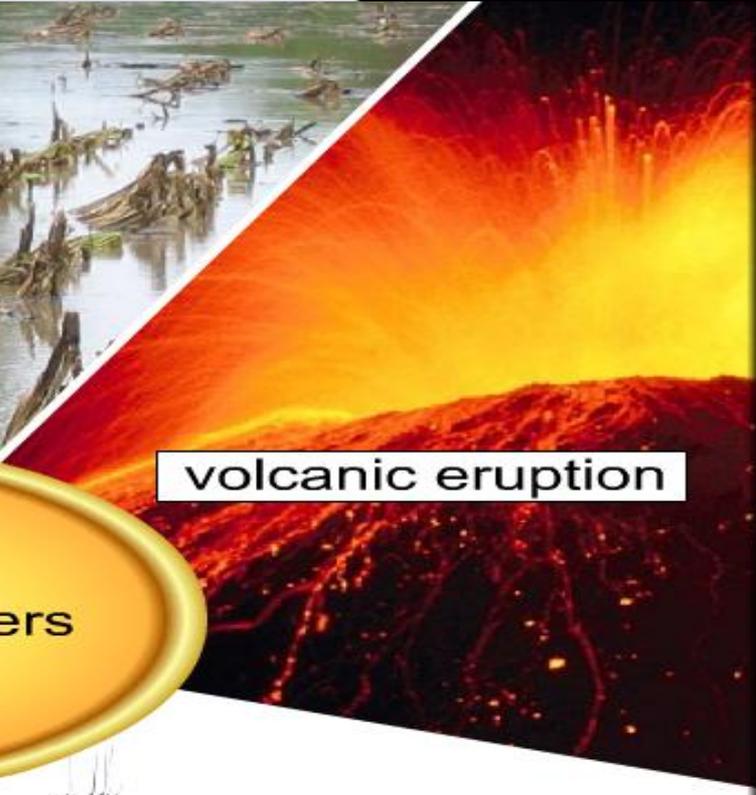
NATURAL DISASTER



drought



flood



volcanic eruption



Natural Disasters



earthquake



typhoon

NATURAL DISASTER

1. **Drought**

- Land become very dry
- Plants and animals die

2. **Floods**

- Cause destruction to plants and animals
- Lead to erosion and landslides

3. Typhoons

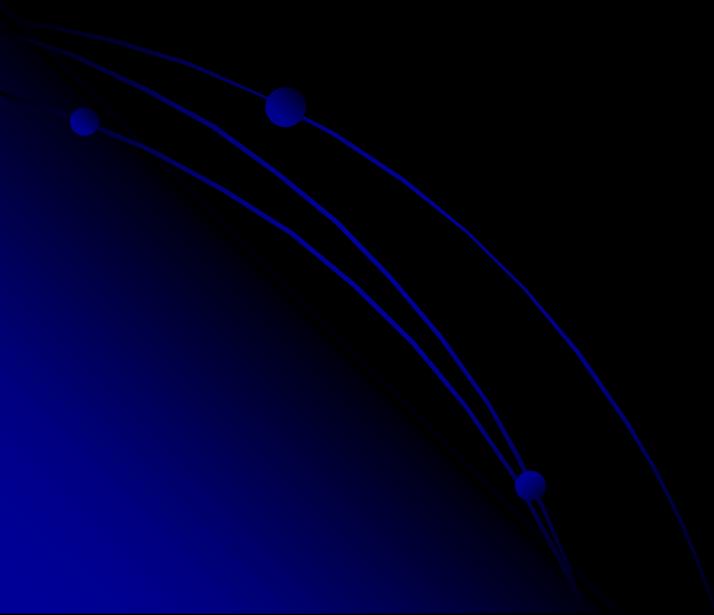
- Cause destruction to all plants in a habitat
- Animals use tree for shelter and protection against predators

4. Earthquake

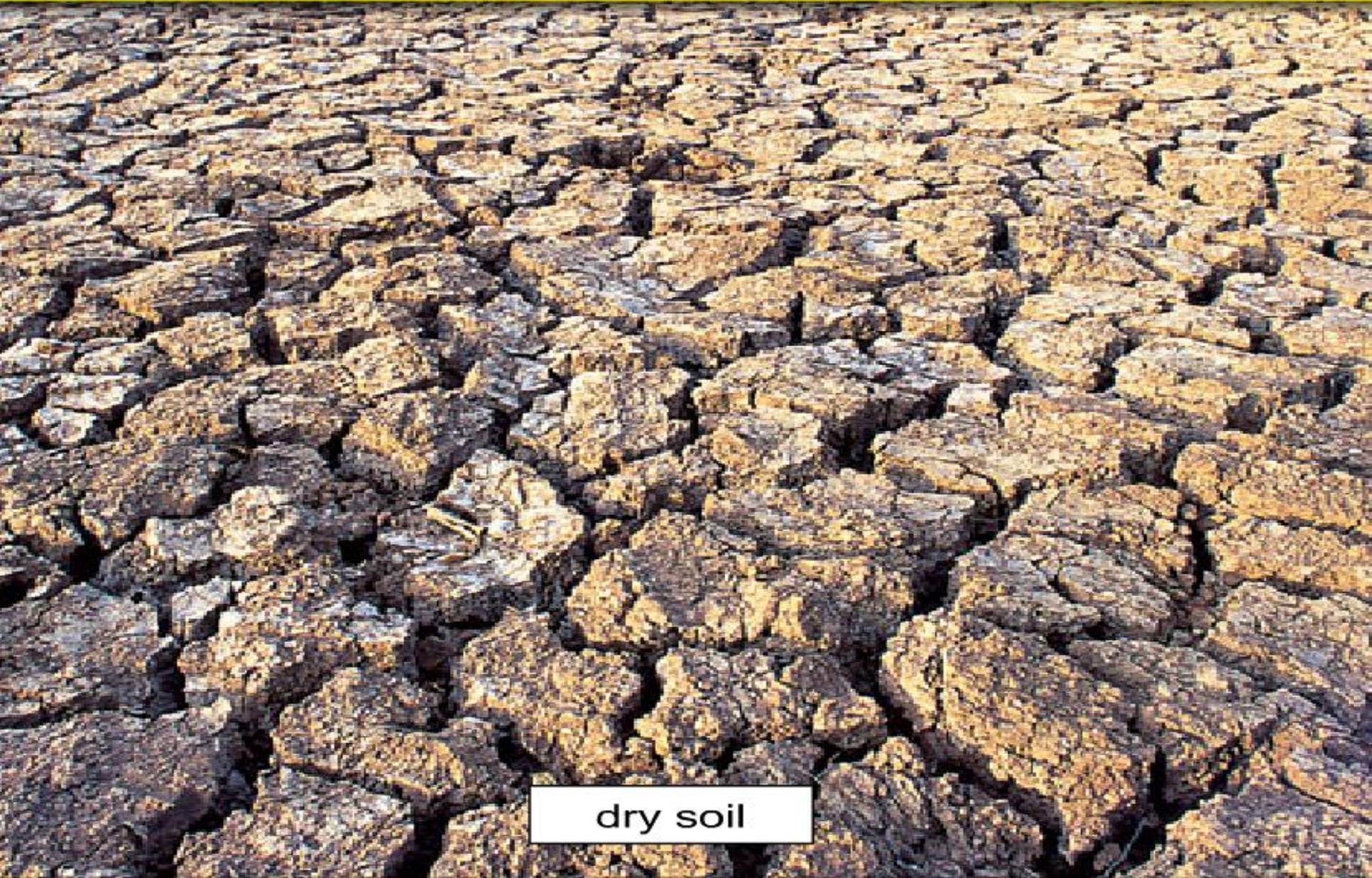
- Can last only for 1 minute
- Cause destruction and loss of lives

5. Volcanic Eruption

- Cause destruction of surrounding areas
- Destruction of habitat
- Cause acid rain



DROUGHT



dry soil

CAUSES



dead animal

CAUSES



FLOOD



flood

CAUSES



CAUSES



CAUSES



soil erosion

VOLCANIC ERUPTIONS



CAUSES – REDUCE THE RATE OF PHOTOSYNTHESIS



CAUSES



acid rain

SILTATION



siltation

AIR POLLUTION



air pollution

TYPHOON



CAUSES



EARTHQUAKE





CAUSES



damaged buildings



destroyed roads

CAUSES



damaged plant



dead animal



habitat destruction

CAUSES



landslide

NATURAL DISASTER



Do you know that human activities can also contribute to disasters?



DEFORESTATION



deforestation

CAUSES OF DEFORESTATION



Ways to maintain the balance in nature

1. Control logging and clearing activities
2. Prevent the hunting of animals to avoid extinction of certain species
3. Control the excessive usage of pesticides and insecticides
4. Reduce the usage of fossil fuel

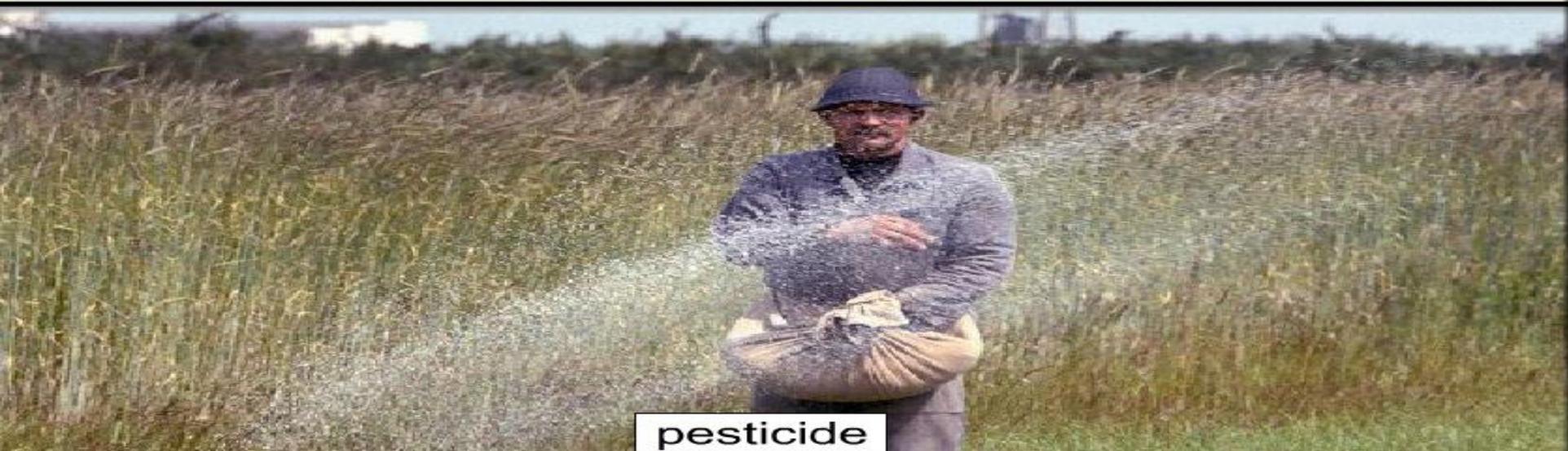
Control logging and clearing



Prevent the hunting of animals



Control the excessive usage of pesticides and insecticides



pesticide

Reduce the usage of fossil fuels



EXERCISE

4. Which of the following effects are caused by volcanic eruptions?

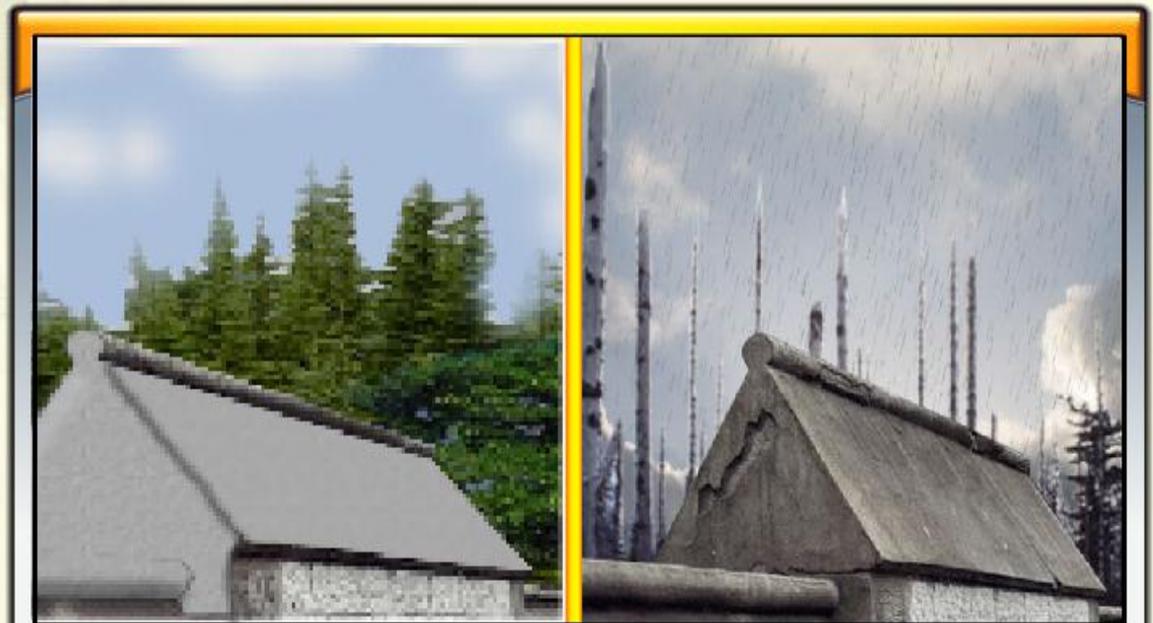
- I. Acid rain
- II. Floods
- III. Air pollution
- IV. Siltation

A I and IV only

B I, III and IV only

C II, III and IV only

D I, II, III and IV



Effects of volcanic eruptions

EXERCISE

5. The graphics show various human activities that disrupt the balance in nature.



Logging



Insecticide

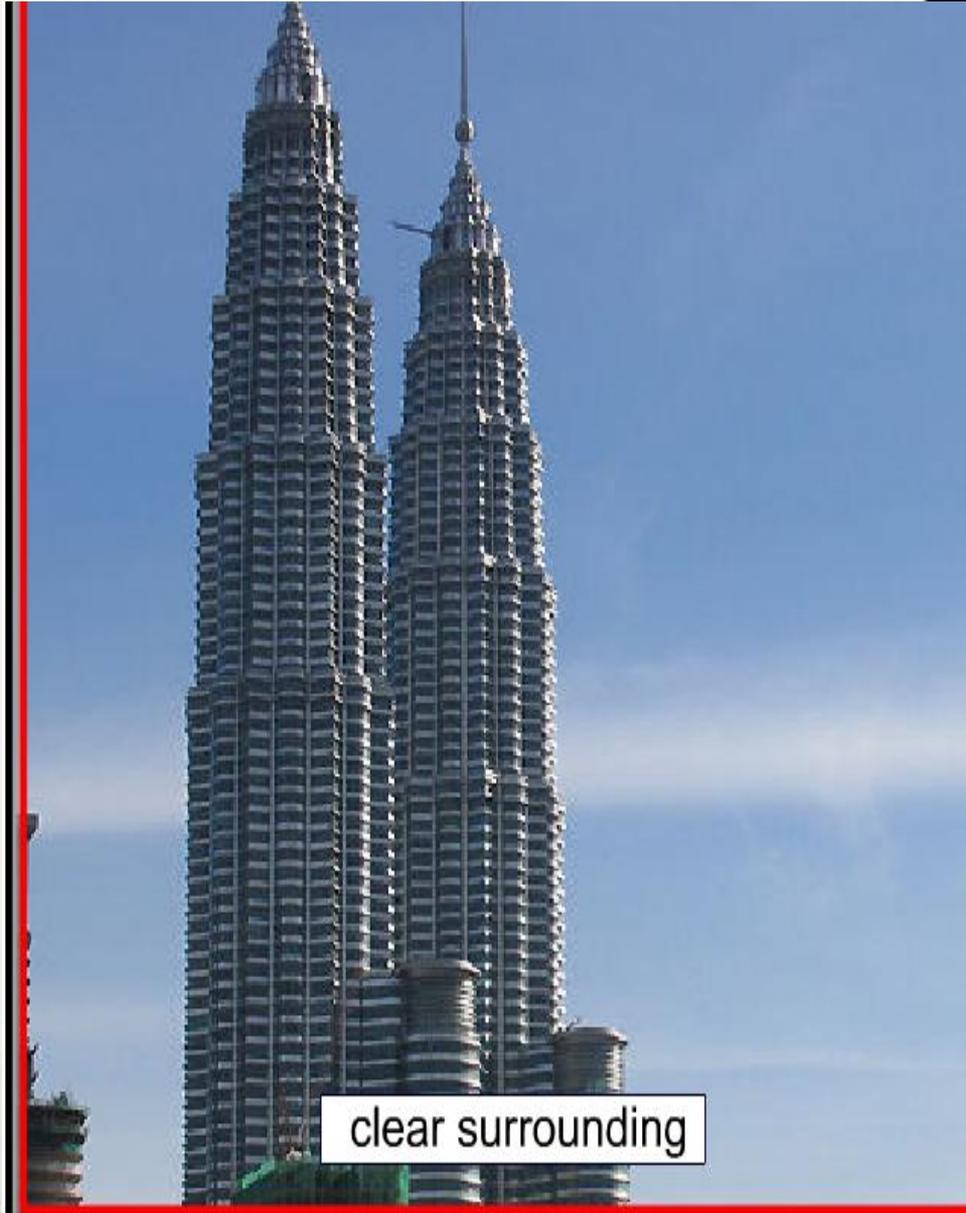
List any three suggested ways to maintain the balance in nature.

I.

II.

III.

ENVIRONMENTAL POLLUTION



ENVIRONMENTAL POLLUTION

1. Environmental pollution is defined as an undesirable **biological chemical or physical** change of the environment caused by **human activities**
2. **Example of pollution are**
 - a. **Air Pollution**
 - b. **Water Pollution**
 - c. **Soil Pollution**
 - d. **Noise Pollution**
 - e. **Solid and hazardous waste pollution**

disposal of industrial waste

fossil fuel combustion

use of fertiliser

Sources of environmental pollution

use of chlorofluorocarbons

vehicles and machines

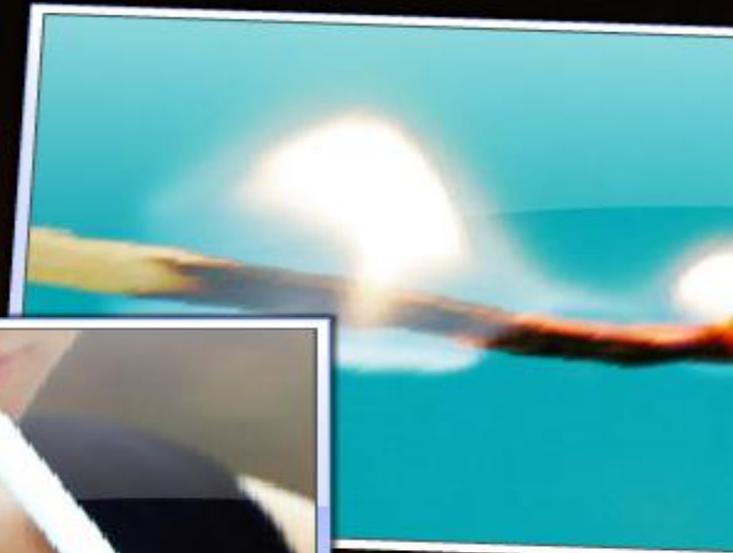
disposal of rubbish and sewage

EFFECT OF ENVIRONMENTAL POLLUTION

1. Deterioration of human health
2. Endangering wildlife animals leading to the extinction of species
3. Loss of economic resources
4. Destruction of habitats and nature











disposal of industrial waste

fossil fuel combustion

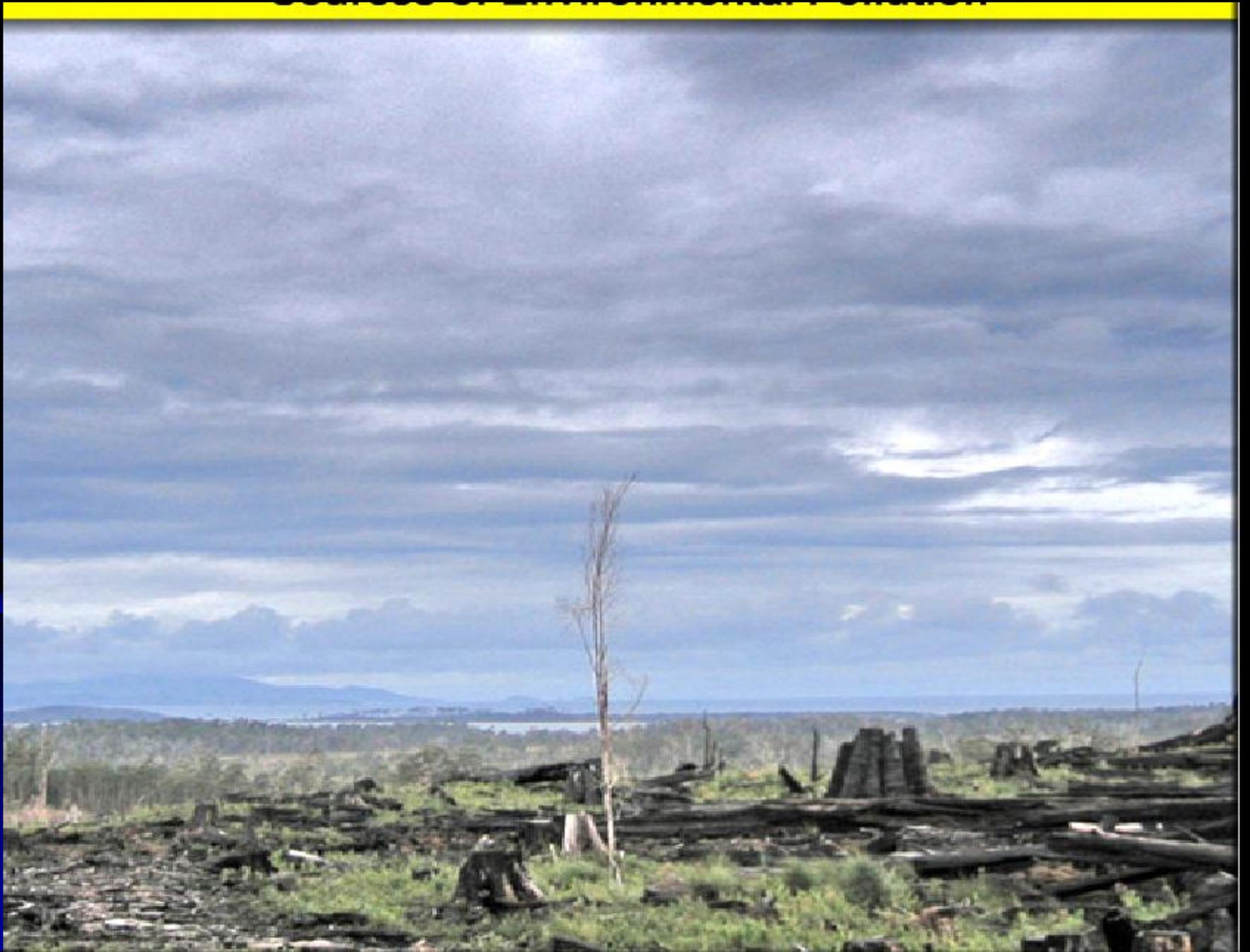
use of fertiliser

Sources of environmental pollution

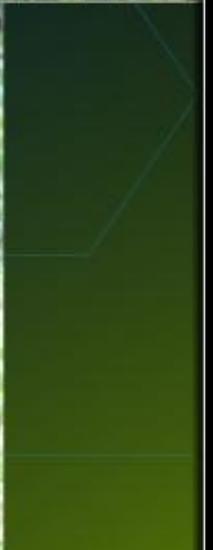
vehicles and machines

use of chlorofluorocarbons

disposal of rubbish and sewage



Sources of Environmental Pollution



EXERCISE

1. Drinking contaminated water over a period of time can cause _____

A eye irritation

B kidney failure

C colon cancer

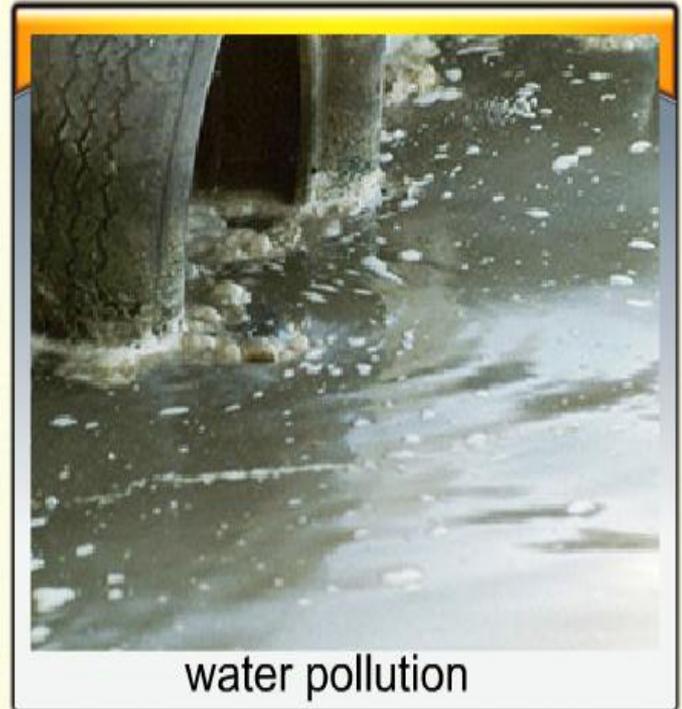
D asthma



contaminated water

2. Which of the following is **not** the source of water pollution?

- A** Gases released from vehicles.
- B** Waste water that is discharged from households.
- C** Industries that use water as a cooling agent.
- D** Water that contains non-biodegradable wastes.



3. Which of the following statements are true?

- I. Acid rain causes death to humans.
- II. Thermal pollution affects the life of aquatic animals.
- III. Excessive usage of fertiliser in the field of agriculture can lead to soil pollution.
- IV. Loss of hearing occurs due to noise pollution.

A I and IV only

B I, III and IV only

C II, III and IV only

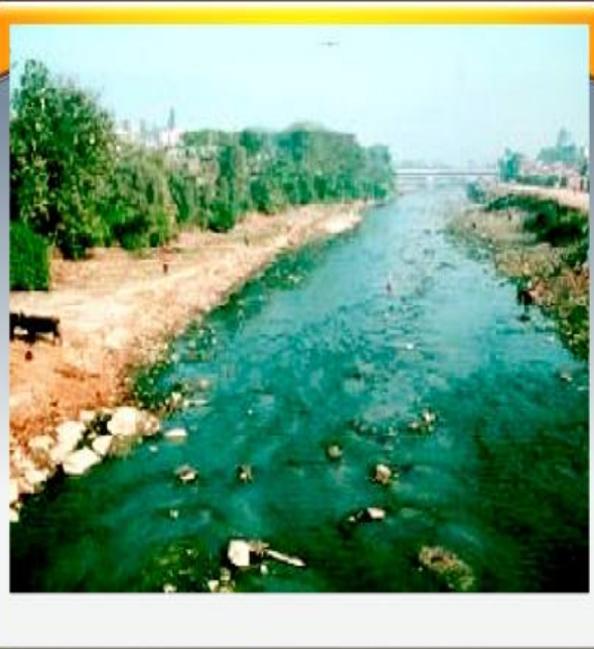
D I, II, III and IV

4. The following table shows the types of pollution, causes and its effects. Which combination is correctly matched?

Pollution	Causes	Effects
A Air	Acid rain	Destruction of buildings
B Water	Carbon monoxide	Marine habitats death
C Noise	Garbage disposal	Hearing loss
D Thermal	Power plants	Eye irritation



5. (a) List four gases that cause air pollution.



5. (a) List four gases that cause air pollution.

Carbon dioxide

Carbon monoxide

Sulphur dioxide

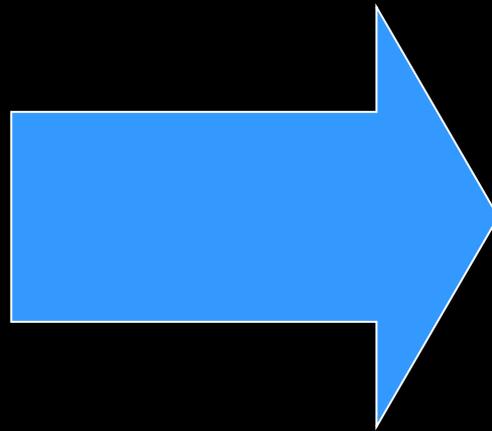
Nitrogen oxide

Earth Hour (26th March 2010)





GLOBAL WARMING



GLOBAL WARMING





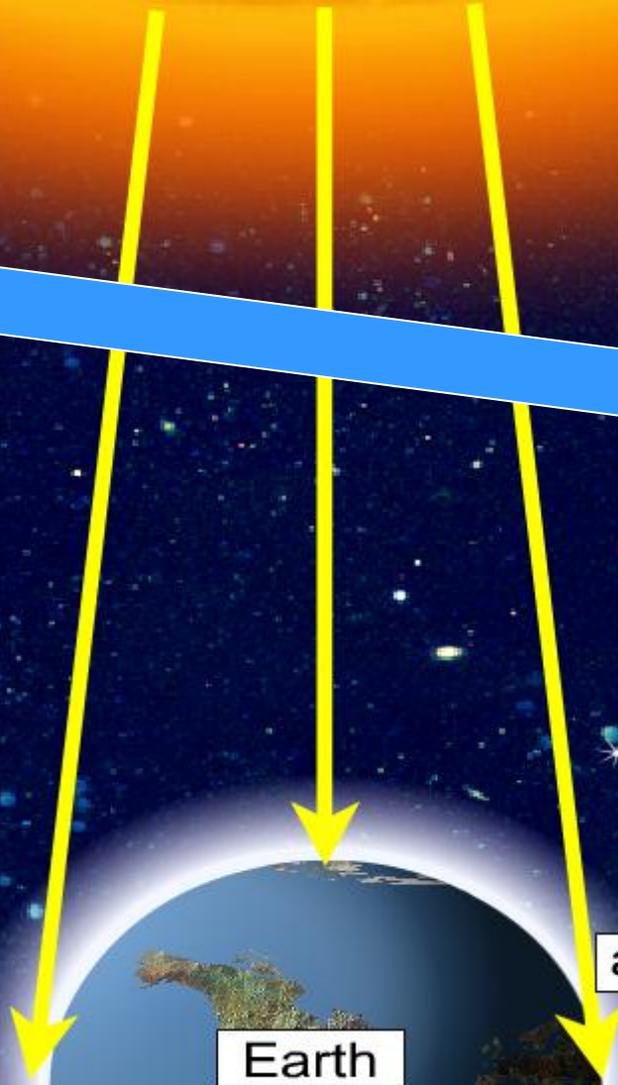
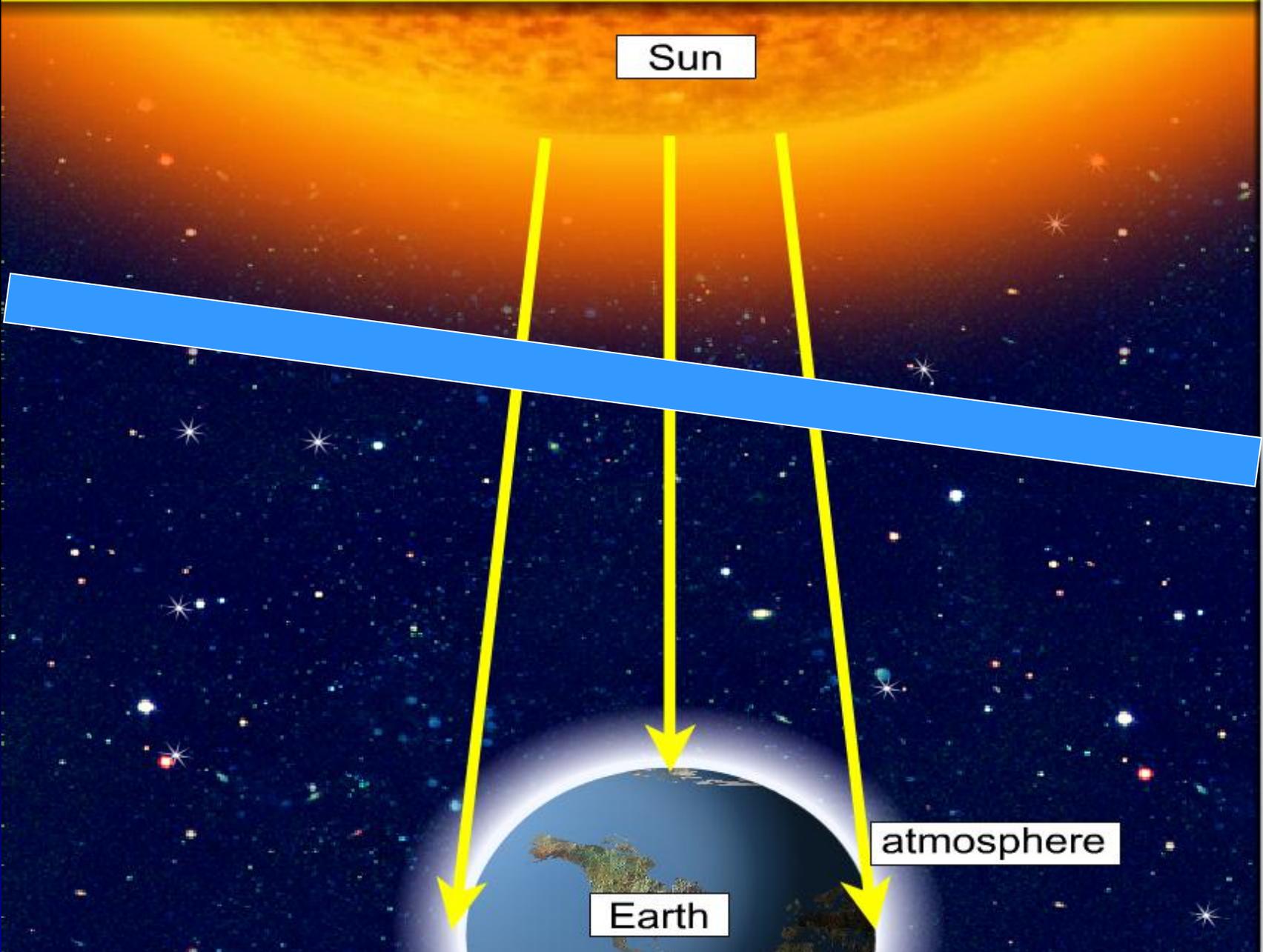
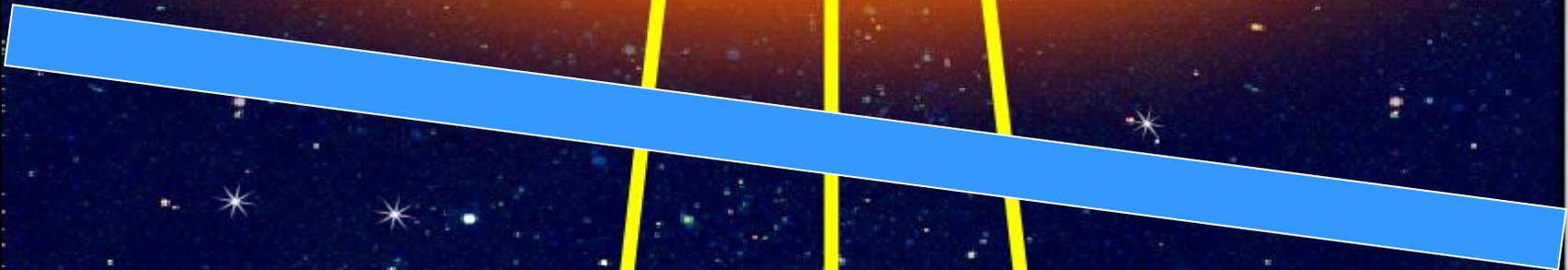


Greenhouse Effect and Global Warming

Sun

atmosphere

Earth



Greenhouse gases

- **carbon dioxide**
- **methane**
- **nitrous oxide**

Global Warming

1. Global warming is the **increase in the average temperature in the world**
2. The dense layer of carbon dioxide traps the sun's heat around the earth, creating **GREENHOUSE EFFECT**
3. **GREENHOUSE** effect is due to the **increase of the amount of carbon dioxide** in the atmosphere.

Human Activities



burning of fossil fuels

Human Activities Increasing Greenhouse Gases



deforestation

What are the human activities which increase the concentration of the greenhouse gases in the atmosphere?

The human activities are burning of fossil fuels, deforestation, open burning and fertilisers used in agriculture.



FRAME 1 2 3 4

Introduction

Content

Activity

Evaluation

Summary

Extension



Human Activities Increasing Greenhouse Gases



Greenhouse gases are formed during uncontrolled combustion and improper use of chemicals.

These gases are to be treated naturally by trees.

However, extensive deforestation destroys millions of hectares annually.

Thus, the limited number of trees is not able to treat the gases.

Human Activities Increasing Greenhouse Gases



fertilisers used in agriculture

What are the human activities which increase the concentration of the greenhouse gases in the atmosphere?

The human activities are burning of fossil fuels, deforestation, open burning and fertilisers used in agriculture.

Human Activities Increasing Greenhouse Gases



open burning

What are the human activities which increase the concentration of the greenhouse gases in the atmosphere?

The human activities are burning of fossil fuels, deforestation, open burning and fertilisers used in agriculture.



FRAME 1 2 3 4

Introduction

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Activity

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Summary

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Impacts of global warming



melting of ice

The increase in the average global temperature has caused a dangerous global warming process that is threatening our current environment.

The melting of the Arctic and Antarctic **ice caps** is due to an increase in global temperature.

Impacts of global warming



increasing sea level

The increase in the average global temperature has caused a dangerous global warming process that is threatening our current environment.

The melting of the Arctic and Antarctic **ice caps** is due to an increase in global temperature.

This causes sea levels to increase resulting in the flooding of lowland areas.

Impacts of global warming



flood

The increase in the average global temperature has caused a dangerous global warming process that is threatening our current environment.

The melting of the Arctic and Antarctic **ice caps** is due to an increase in global temperature.

This causes sea levels to increase resulting in the flooding of lowland areas.

Ways to reduce effect of greenhouse

1. Reduce the use of fossil fuels
 2. Control logging activities
 3. Practise reforestation to replace logged plants, this will balance the consumption and production of carbon dioxide in nature
- 

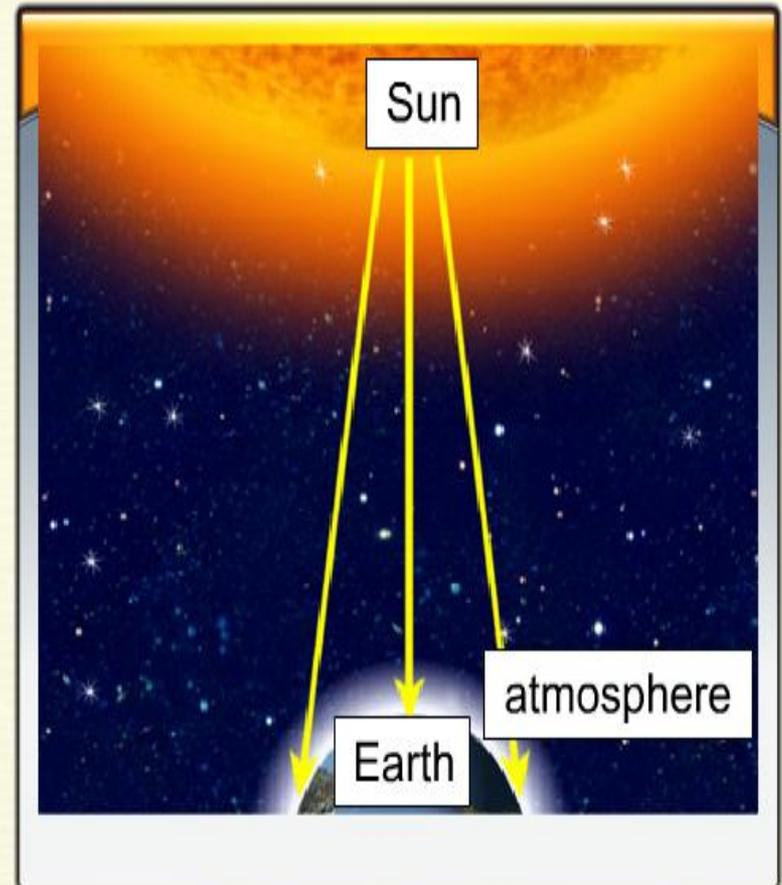
1. The incoming solar radiation is absorbed into the atmosphere by _____.

A ultraviolet rays

B earth surface heat

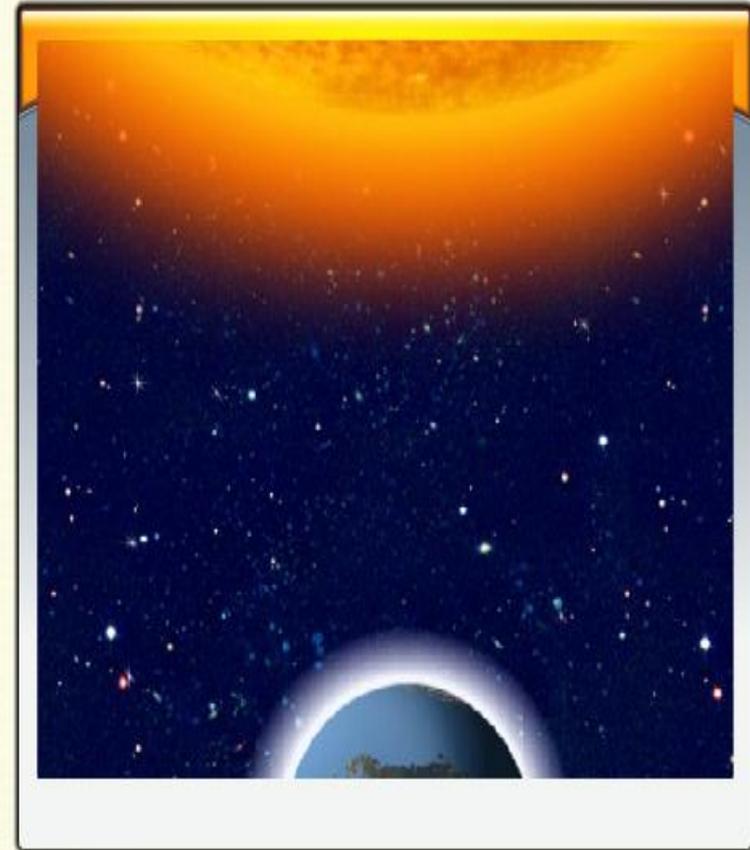
C greenhouse gases

D infrared radiation from the surface



2. What is global warming?

- A** A fall in the average temperature of the Earth's atmosphere.
- B** A fall in carbon monoxide gas in the Earth's atmosphere.
- C** A rise in carbon monoxide gas in the Earth's atmosphere.
- D** A rise in the average temperature of the Earth's atmosphere.



Use of Pesticides



Spray of Pesticides





Ozone Layer



Earth

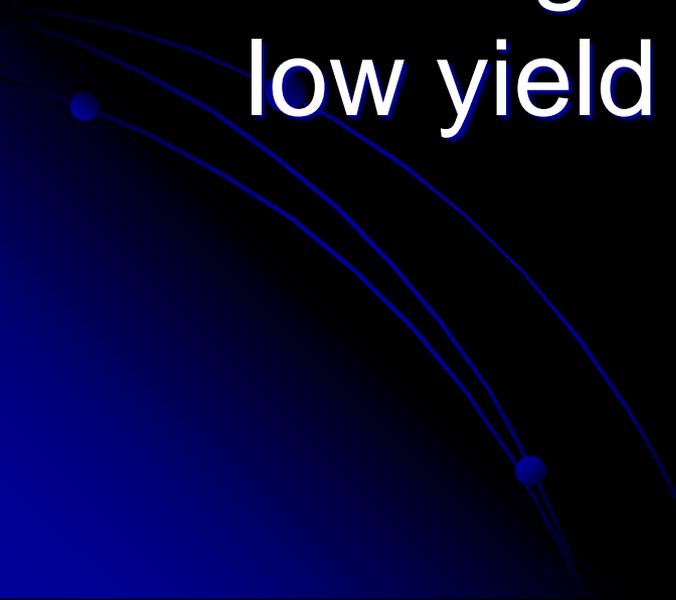
Ozone Layer

1. Ozone is a gas made up of molecules consisting of **three oxygen atoms** each
2. Found in the **stratosphere**.
3. Importance – Helps to protect the earth from excess **ultraviolet light from the sun**

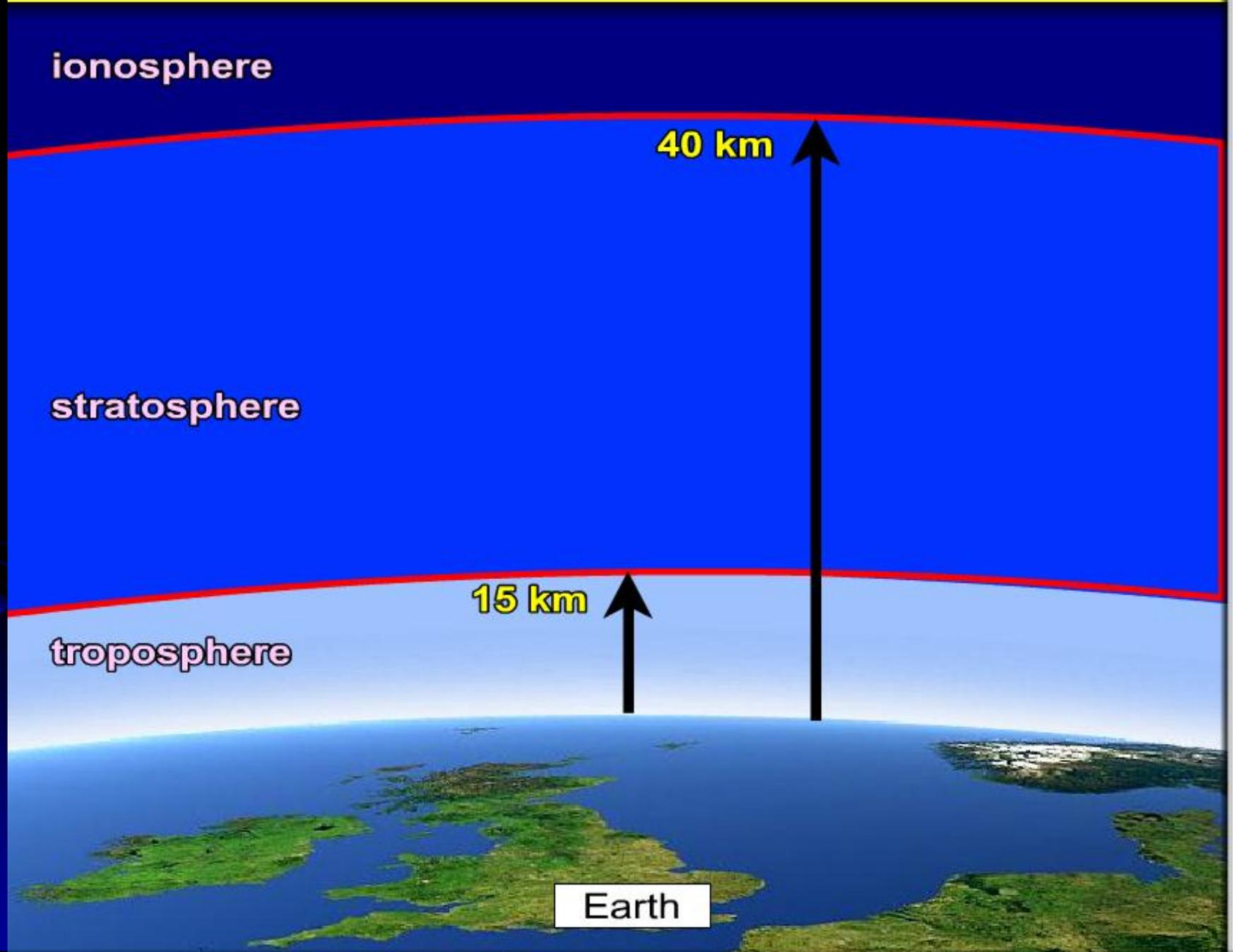
Use of Chlorofluorocarbon (CFC)

1. Refrigerator
 2. Air Conditioner
 3. Aerosol Spray
- 

Effects of Ozone Depletion

1. Causes Cataract
 2. Less resistant to disease
 3. Damage crops and resulting of low yield
- 

Ozone Location and Formation



Ozone Location and Formation

ionosphere

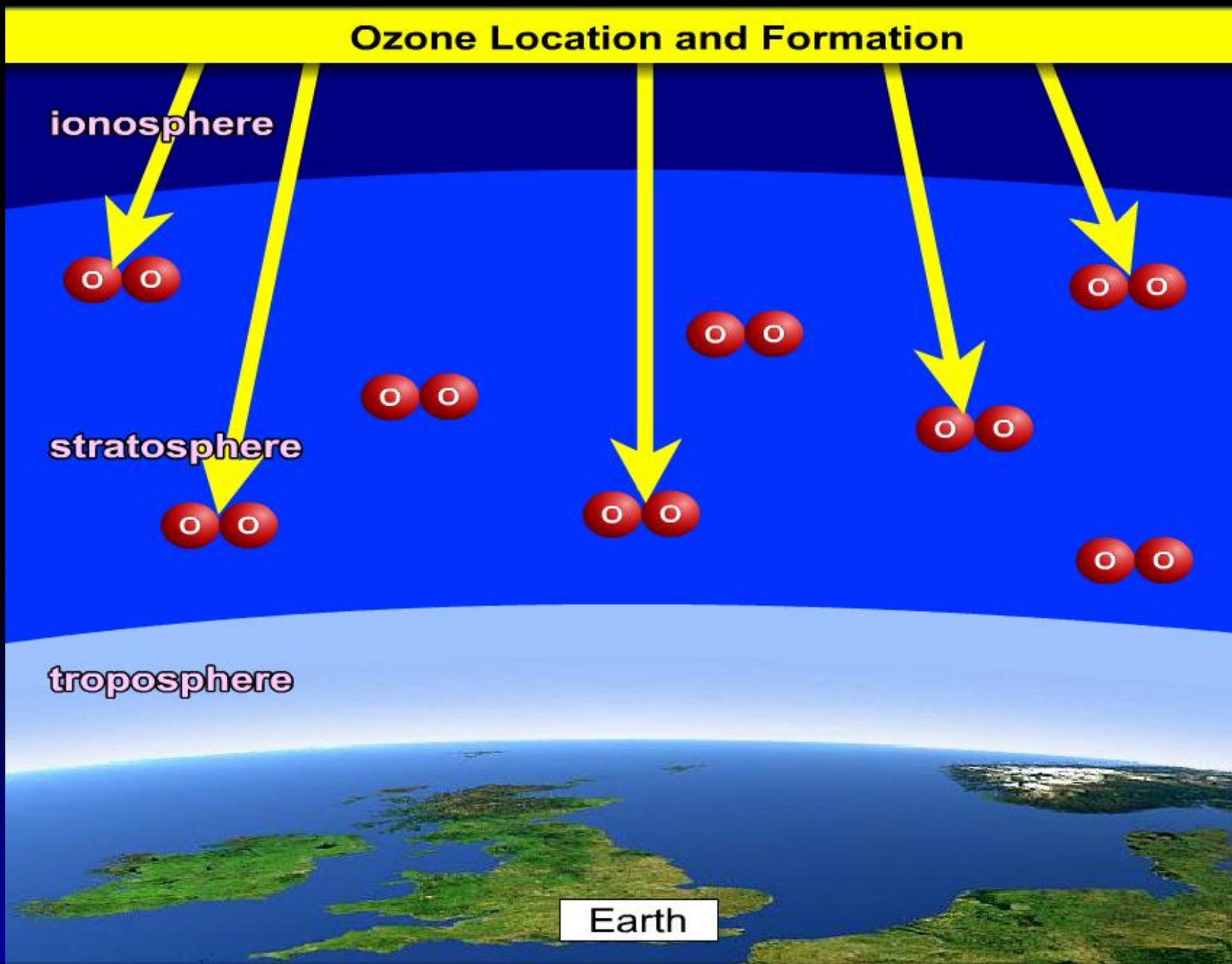


stratosphere



troposphere

Earth

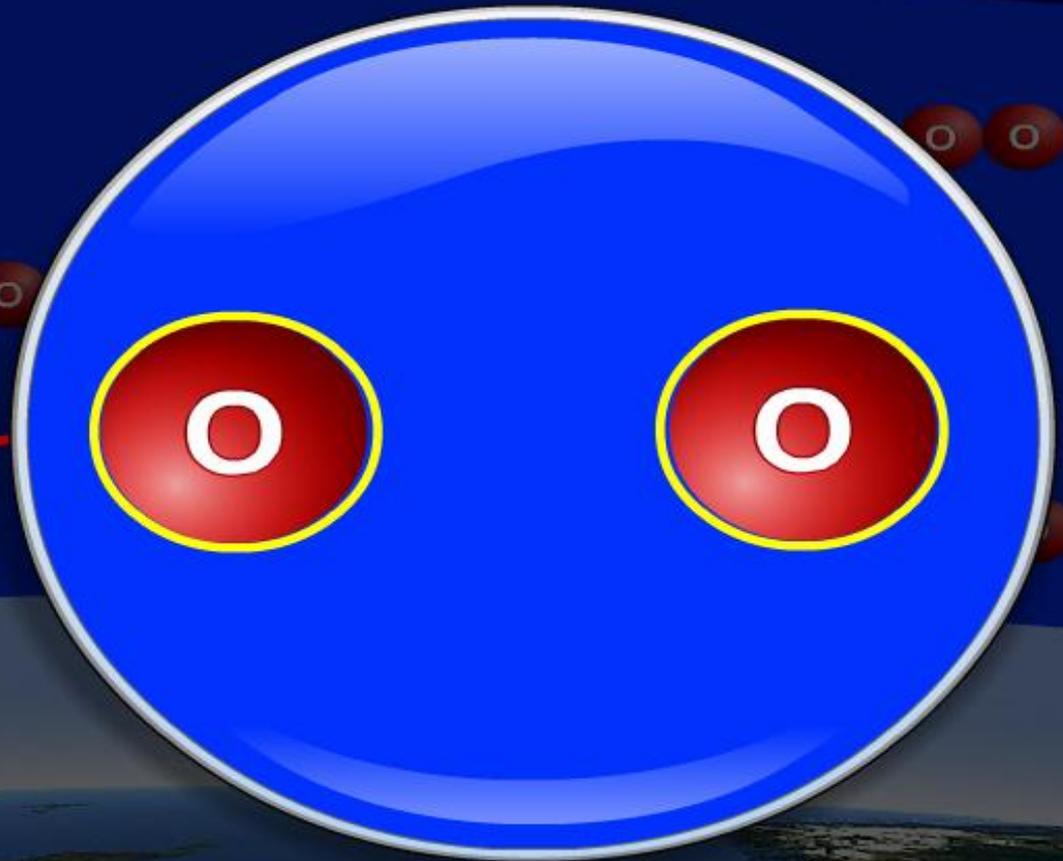


Stratosphere - Ozone Formation

ionosphere

stratosphere

troposphere



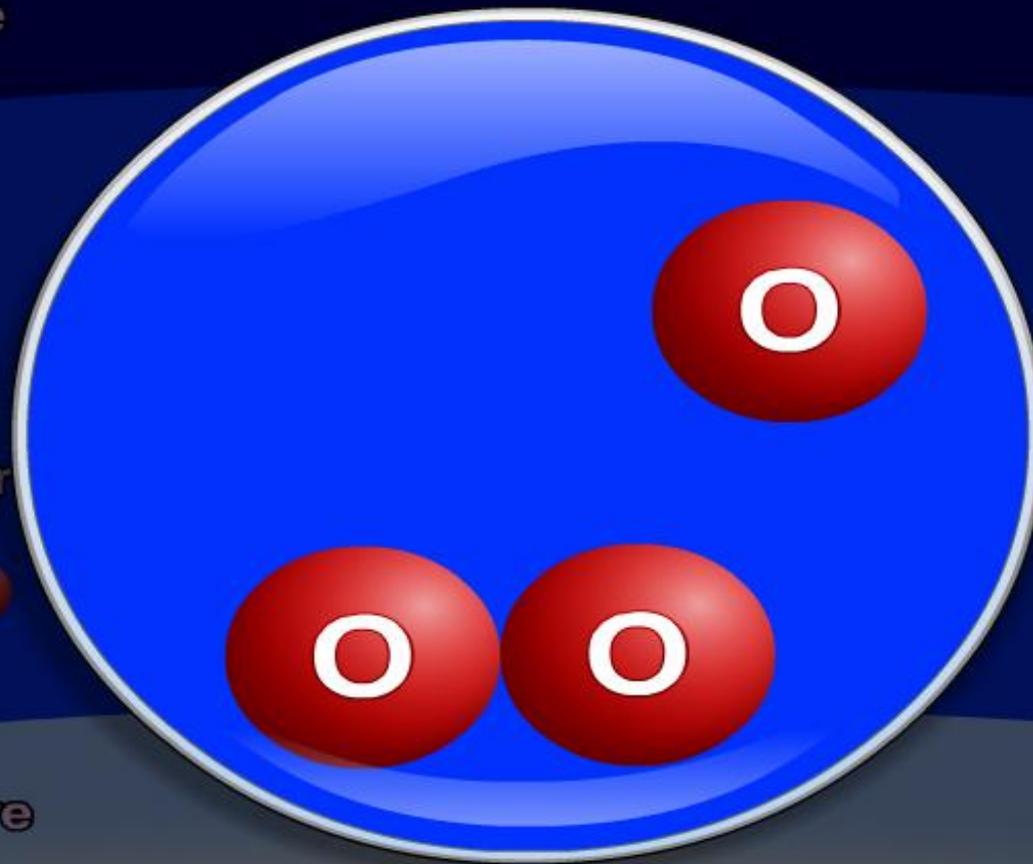
Earth

Stratosphere - Ozone Formation

ionosphere

stratosphere

troposphere



Earth

Stratosphere - Ozone Formation

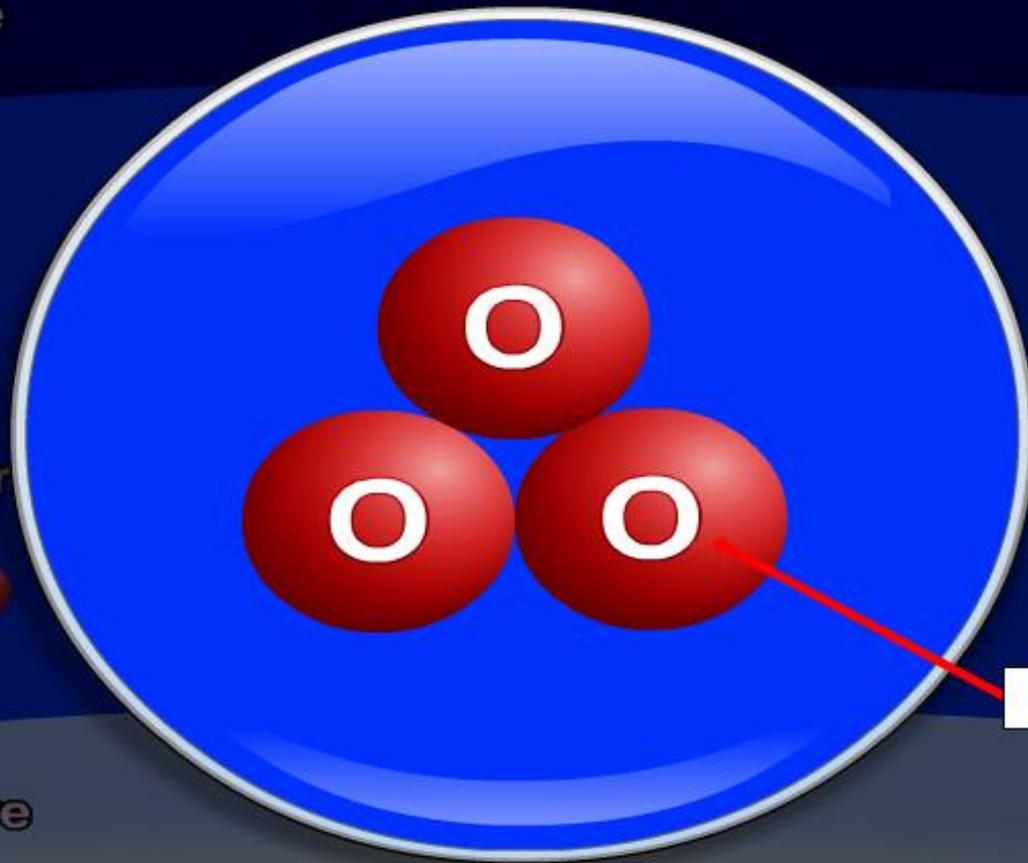
ionosphere

stratosphere

troposphere

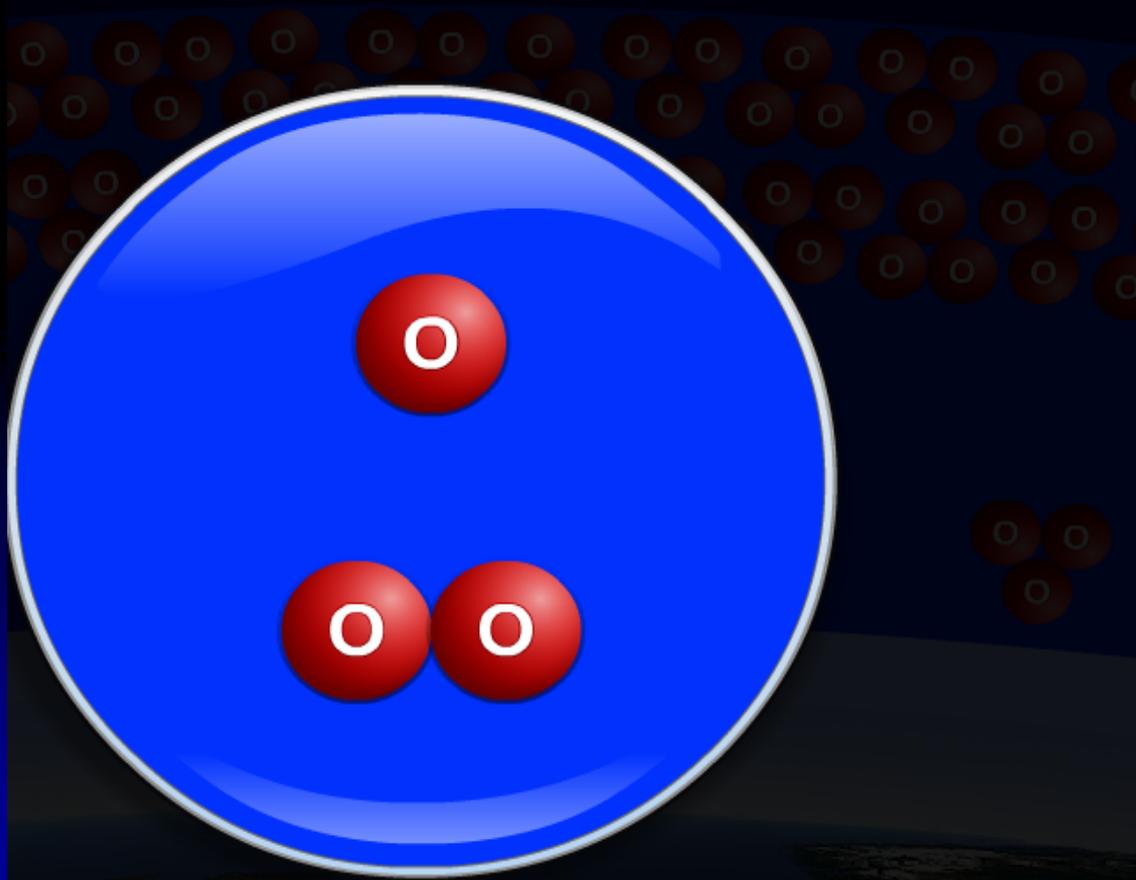
Earth

ozone



Splitting Ozone

Stratosphere - Ozone Formation

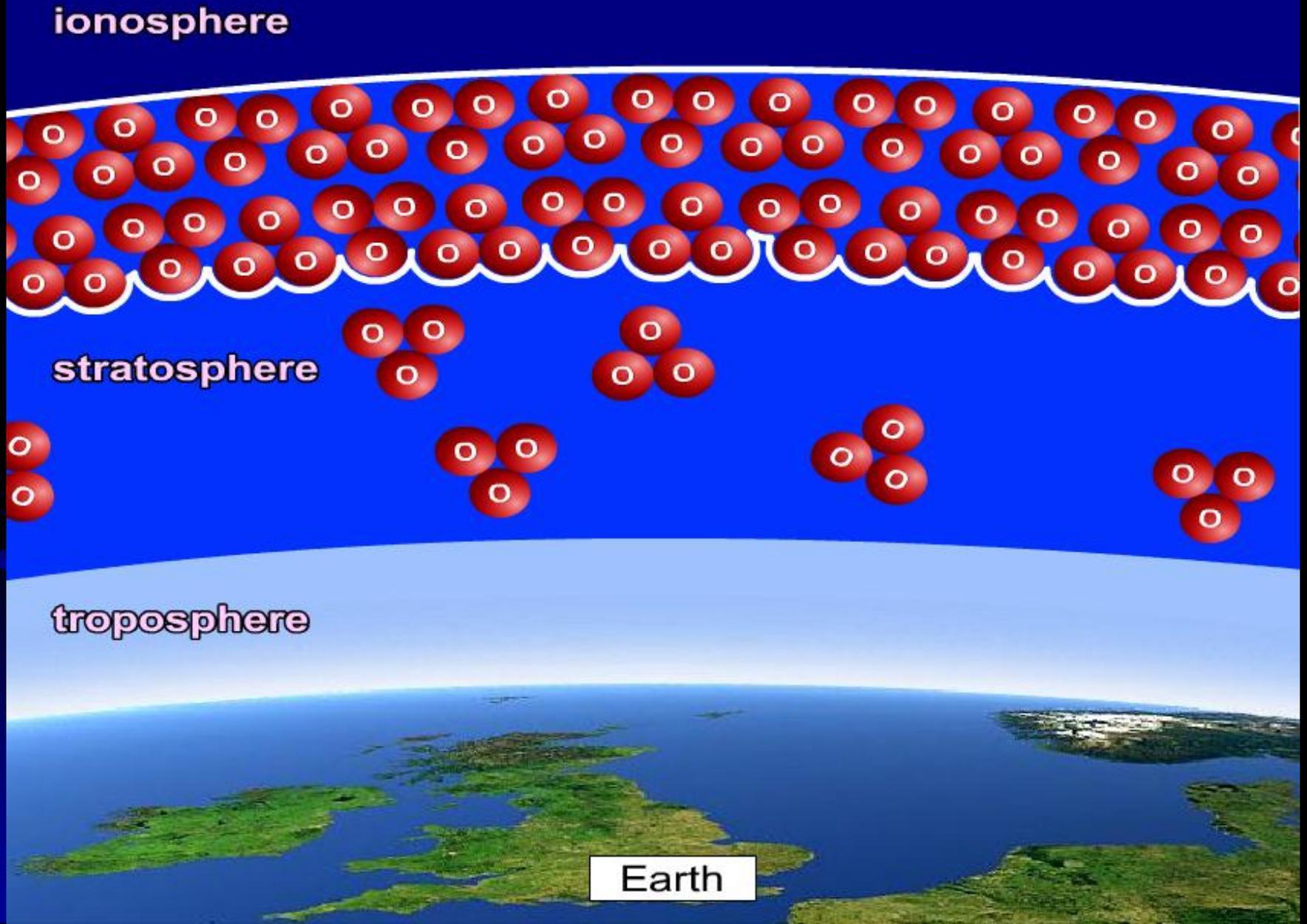


The total amount of ozone remains constant because its formation and destruction occur at the same rate to maintain the equilibrium.

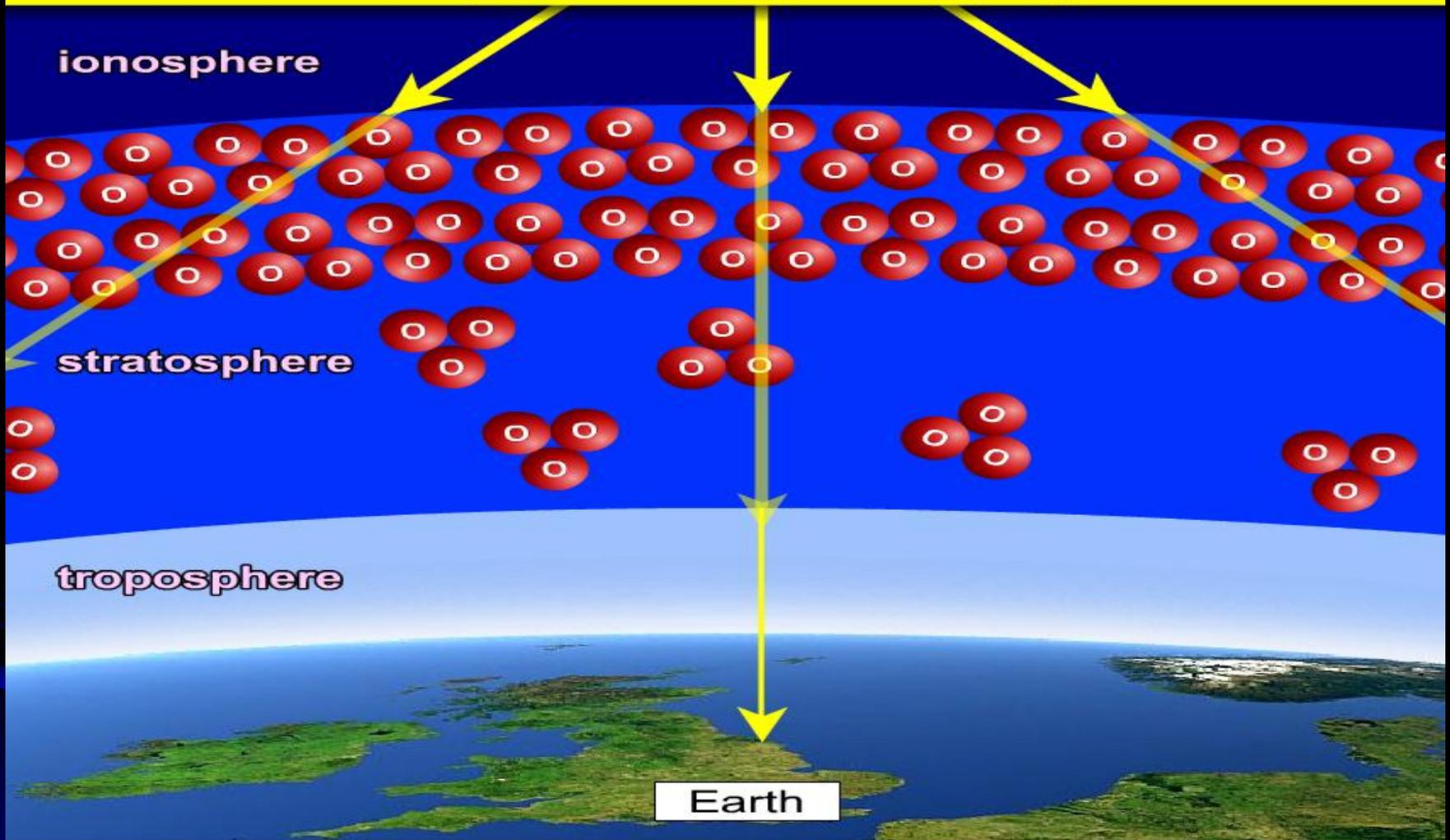
How does this happen?

When the ozone molecule absorbs the ultraviolet radiation, the molecule splits back into oxygen atom and an oxygen molecule.

Stratosphere - Ozone Formation



Importance of the Ozone Layer



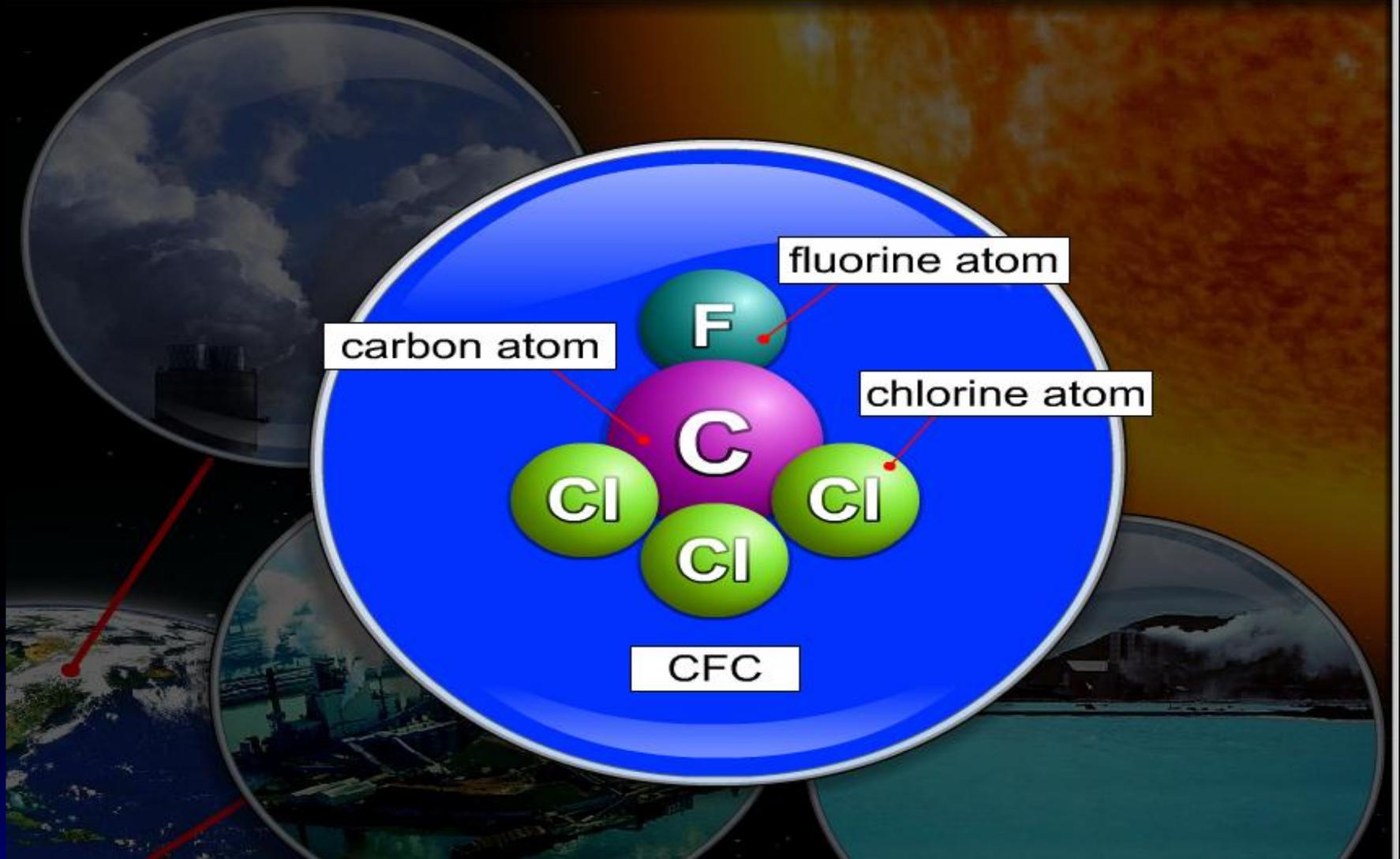
Absorb 95%-99% most of harmful ultraviolet radiation

Importance of the Ozone Layer



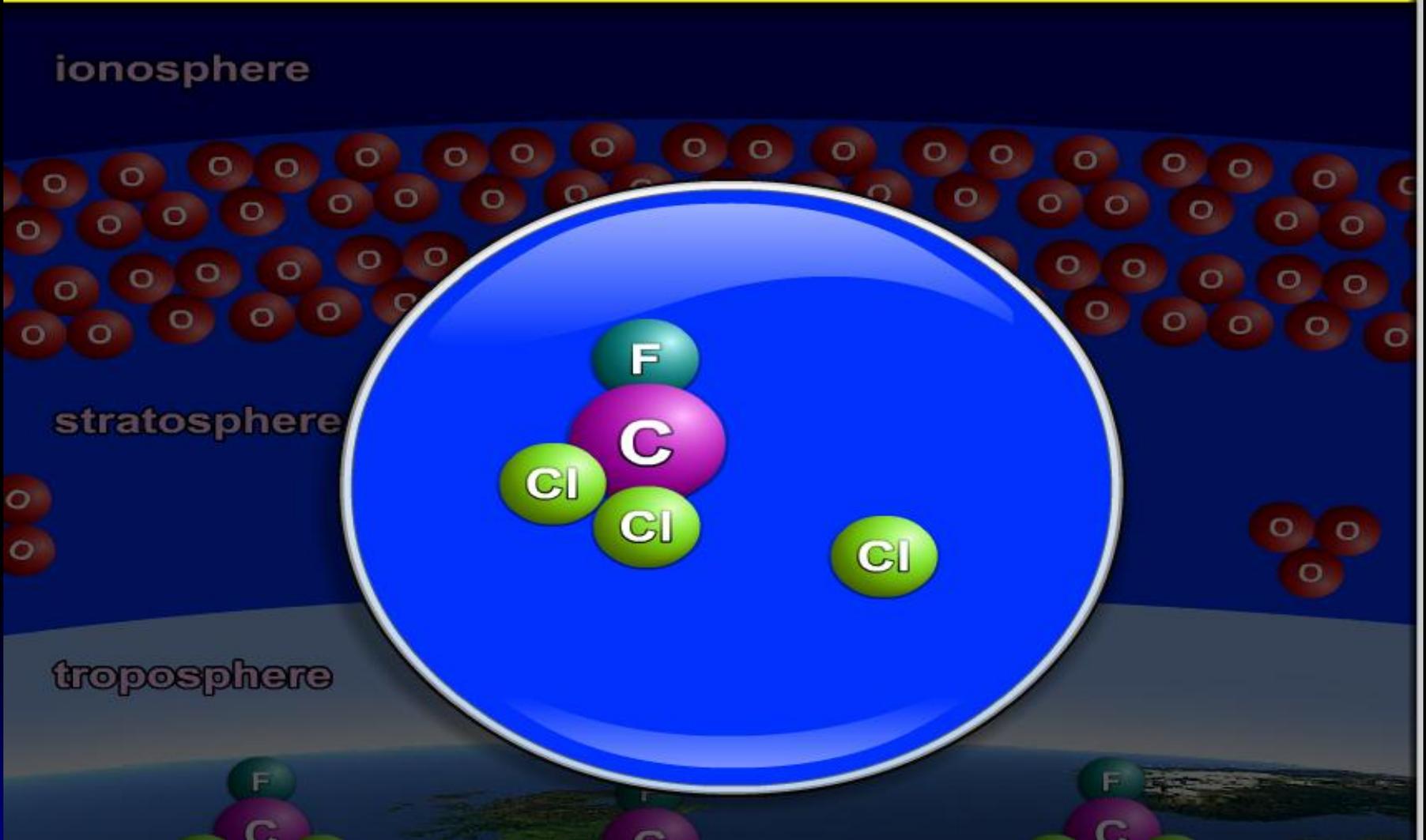
skin cancer

Ozone Destruction



Manufactured Substance destroyed ozone layer

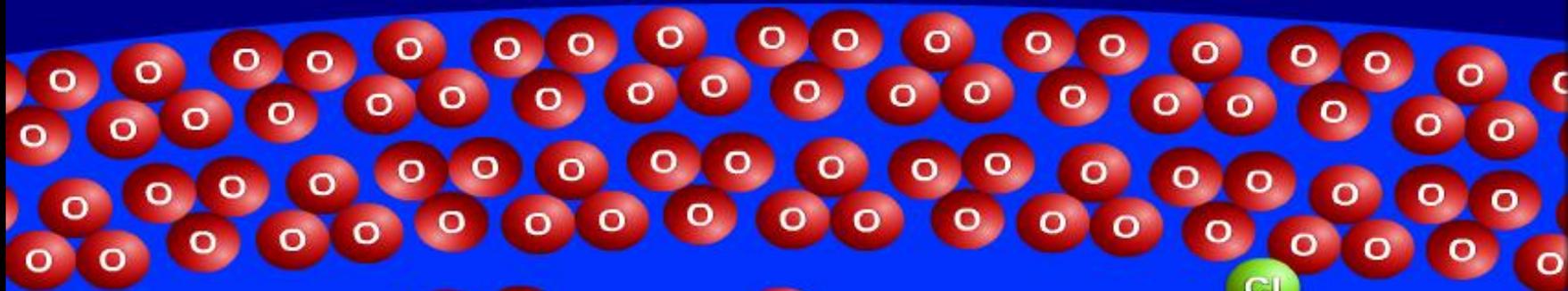
Ozone Destruction



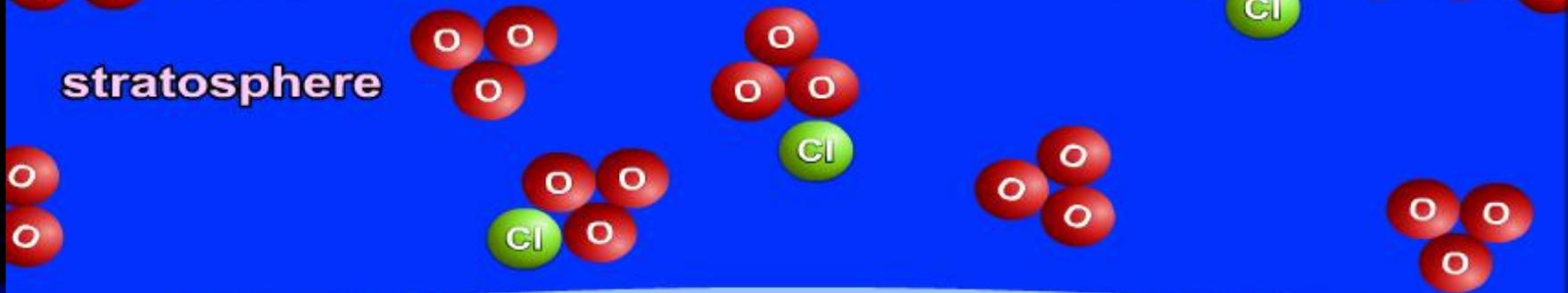
Very Stable and Strong Ultraviolet Radiation can break it down

Ozone Destruction

ionosphere



stratosphere



troposphere



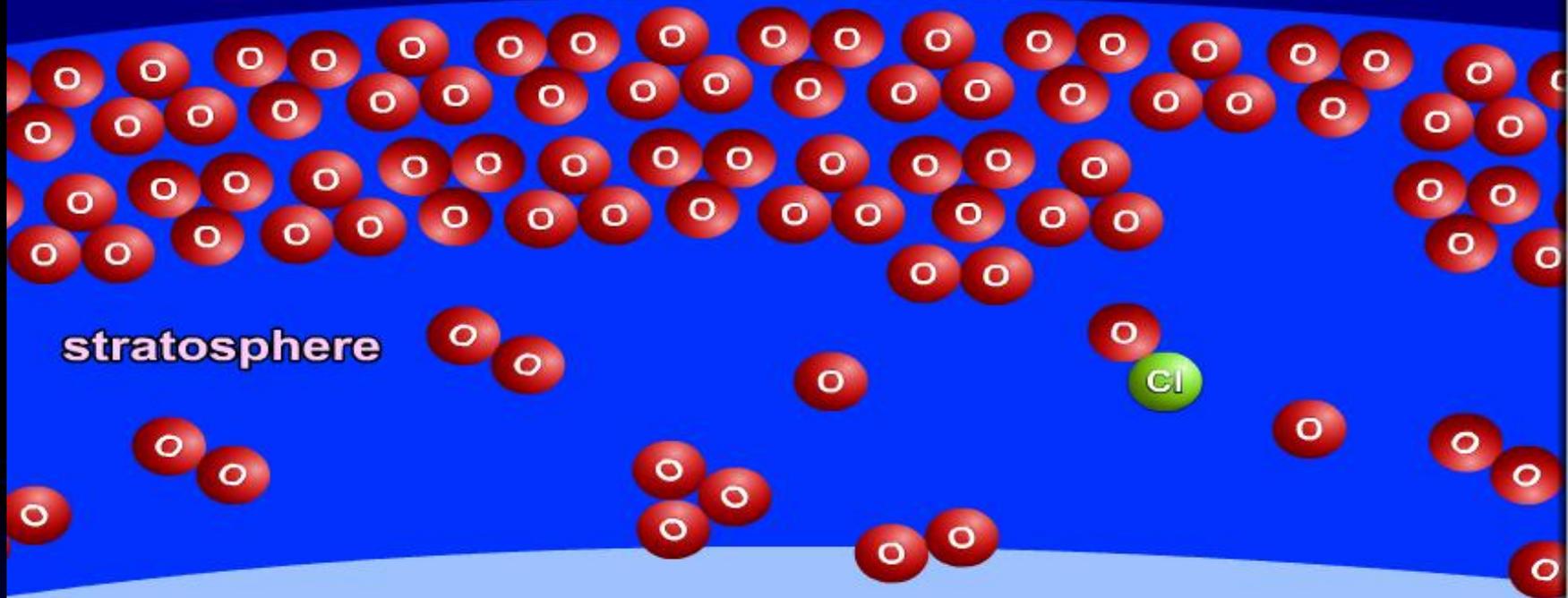
Ozone Destruction

ionosphere

stratosphere

troposphere

Earth



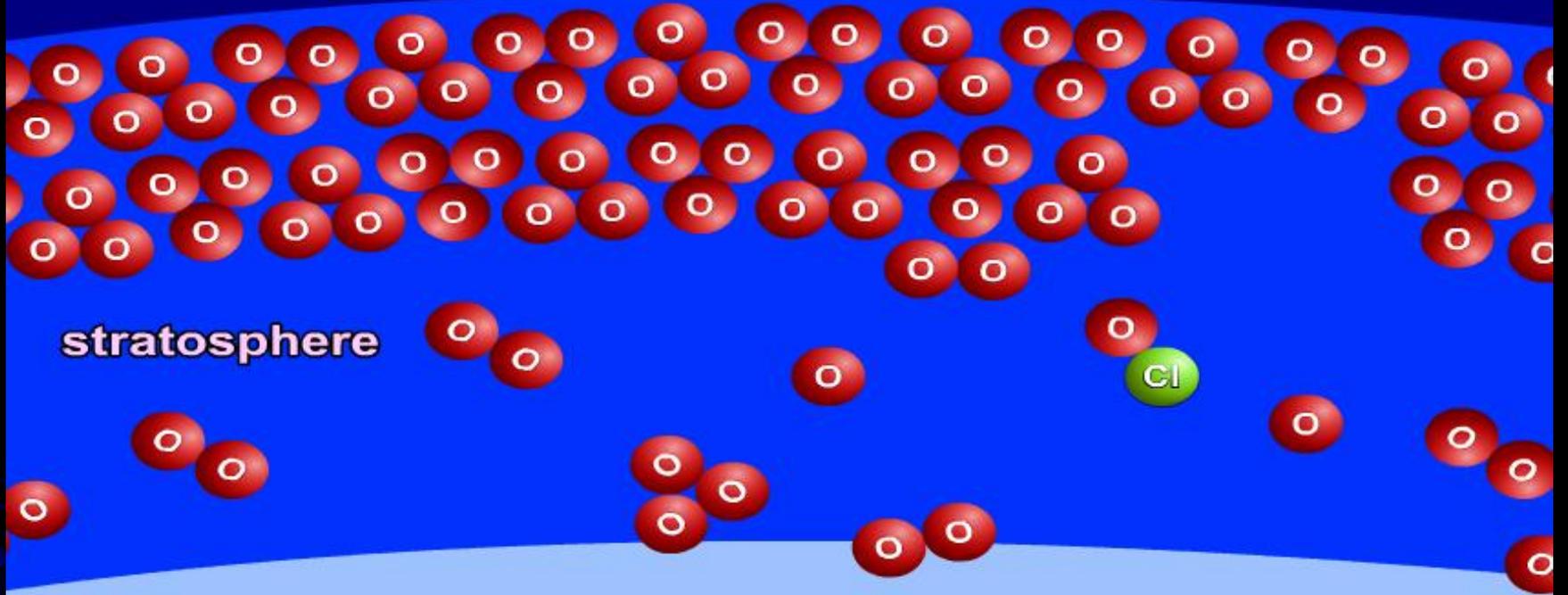
Ozone Destruction

ionosphere

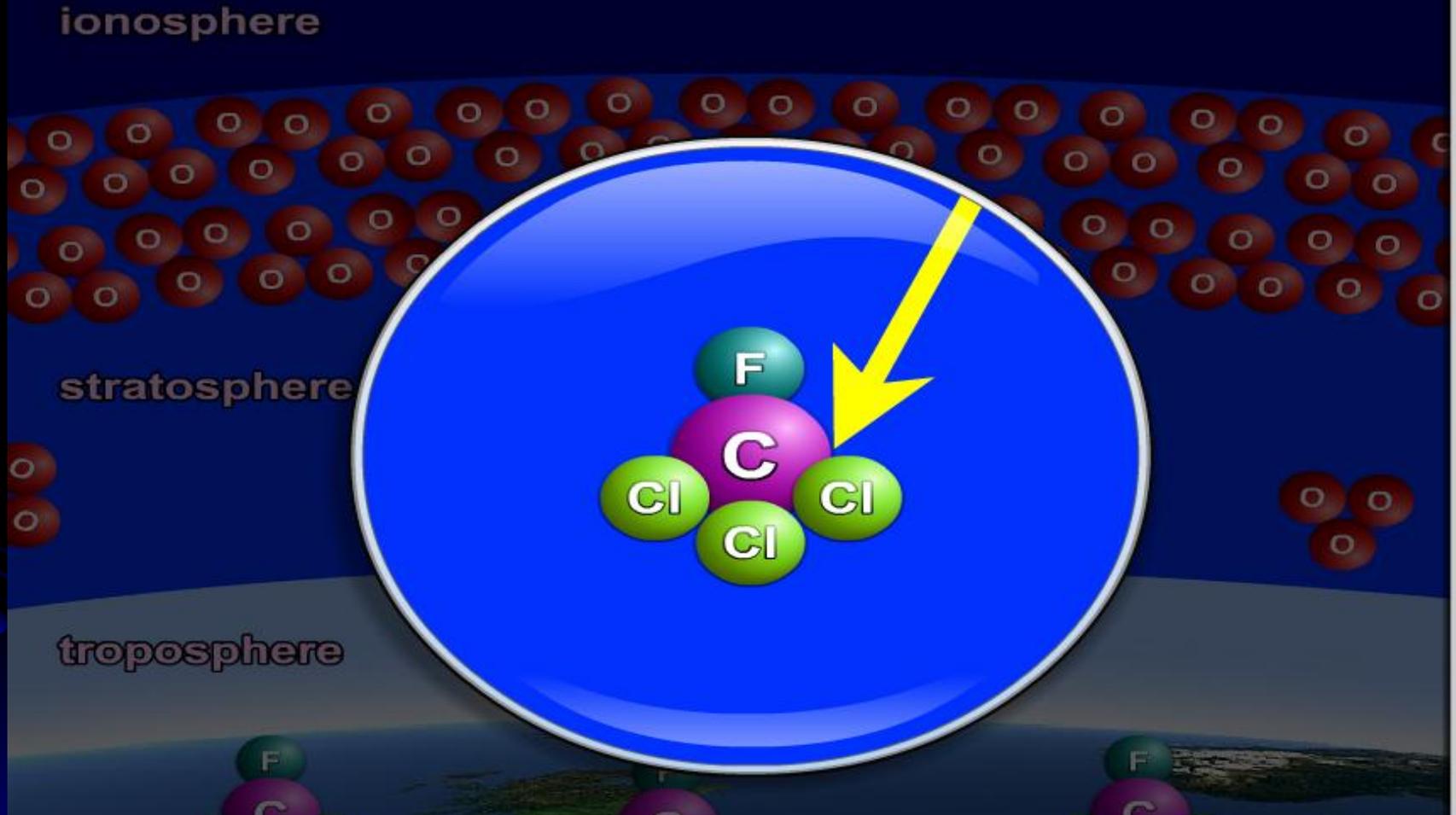
stratosphere

troposphere

Earth

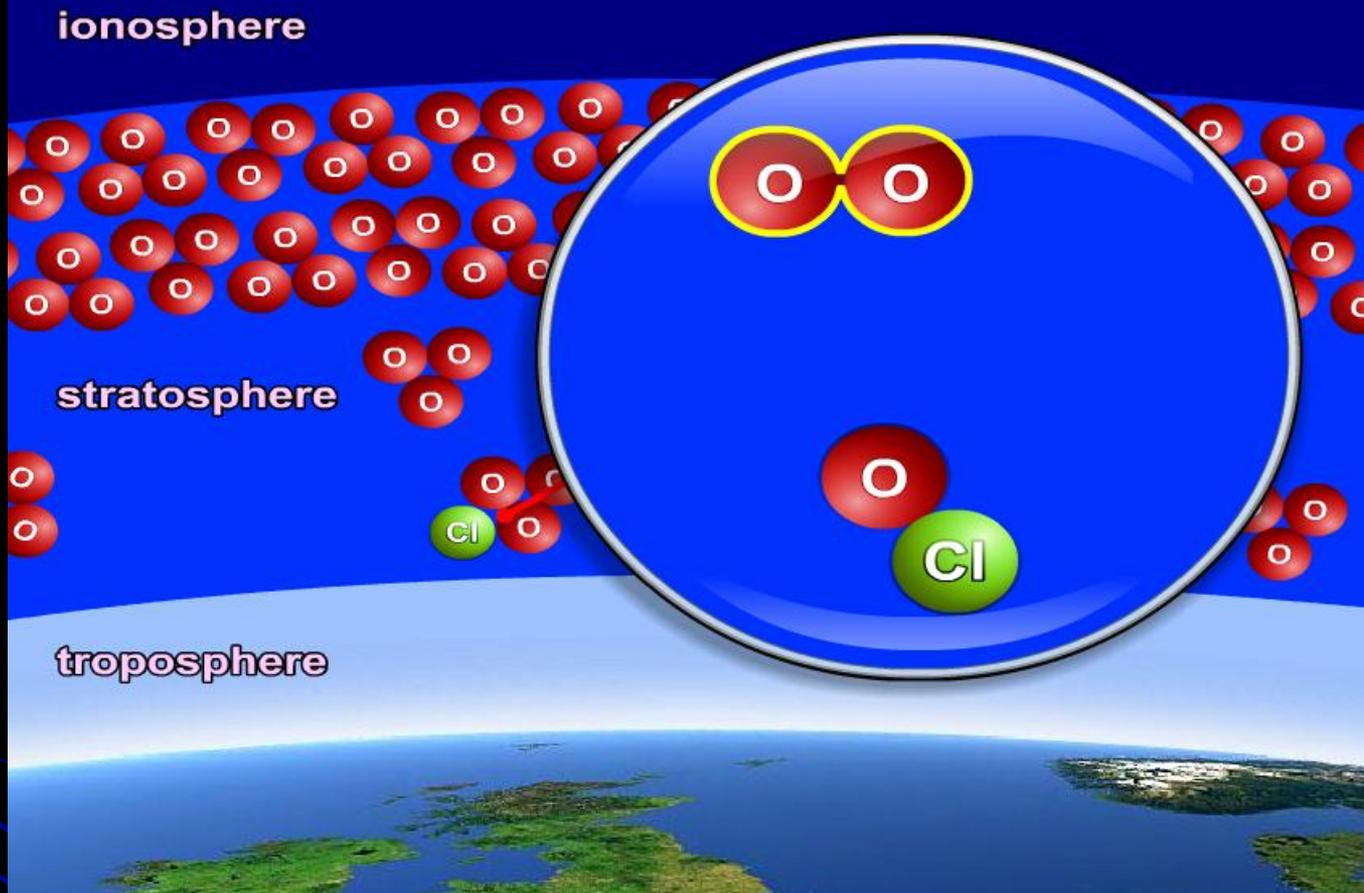


Ozone Destruction



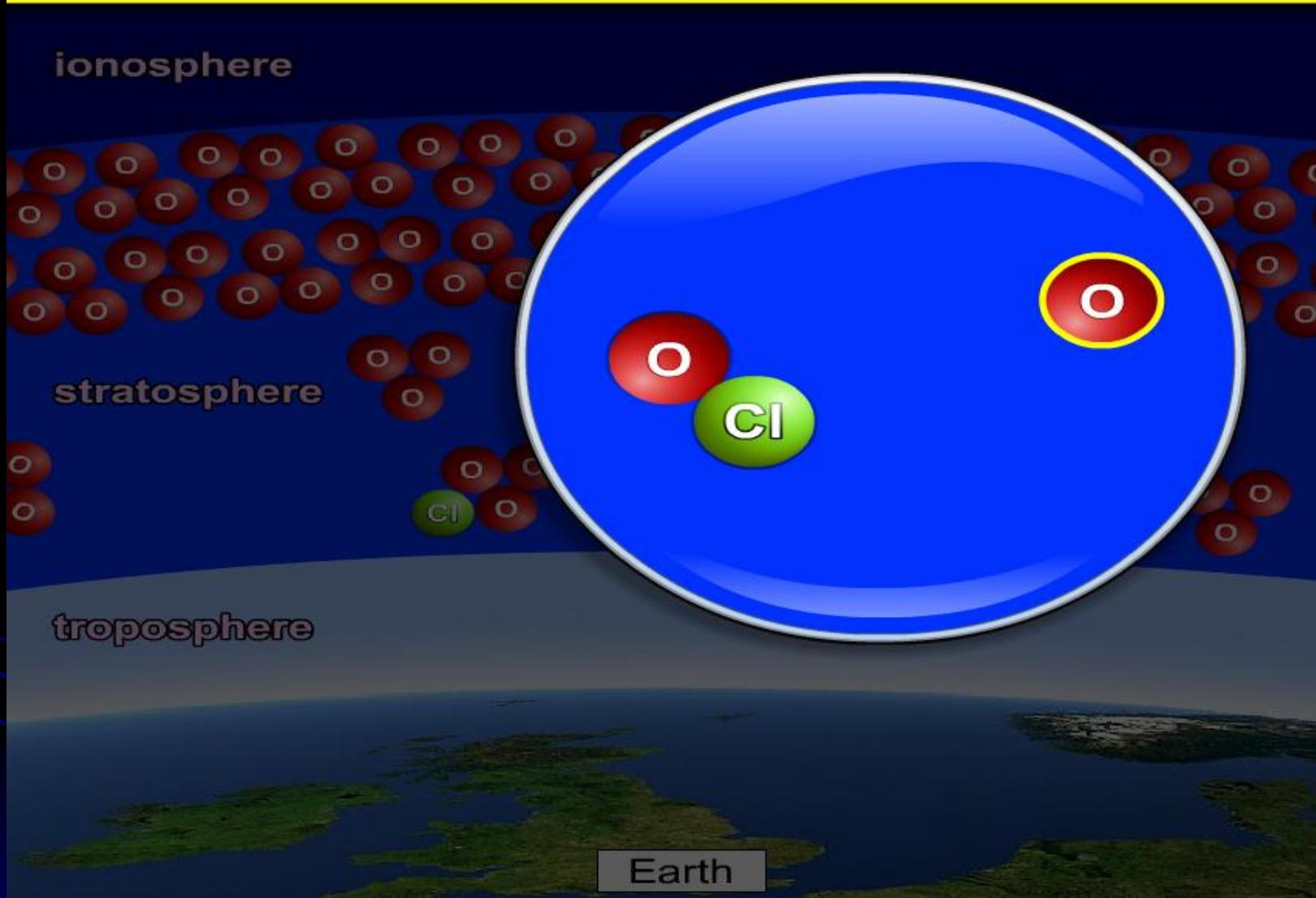
When it goes to atmosphere it will be broken down by Ultraviolet Radiation and release active Chlorine atom

Ozone Destruction



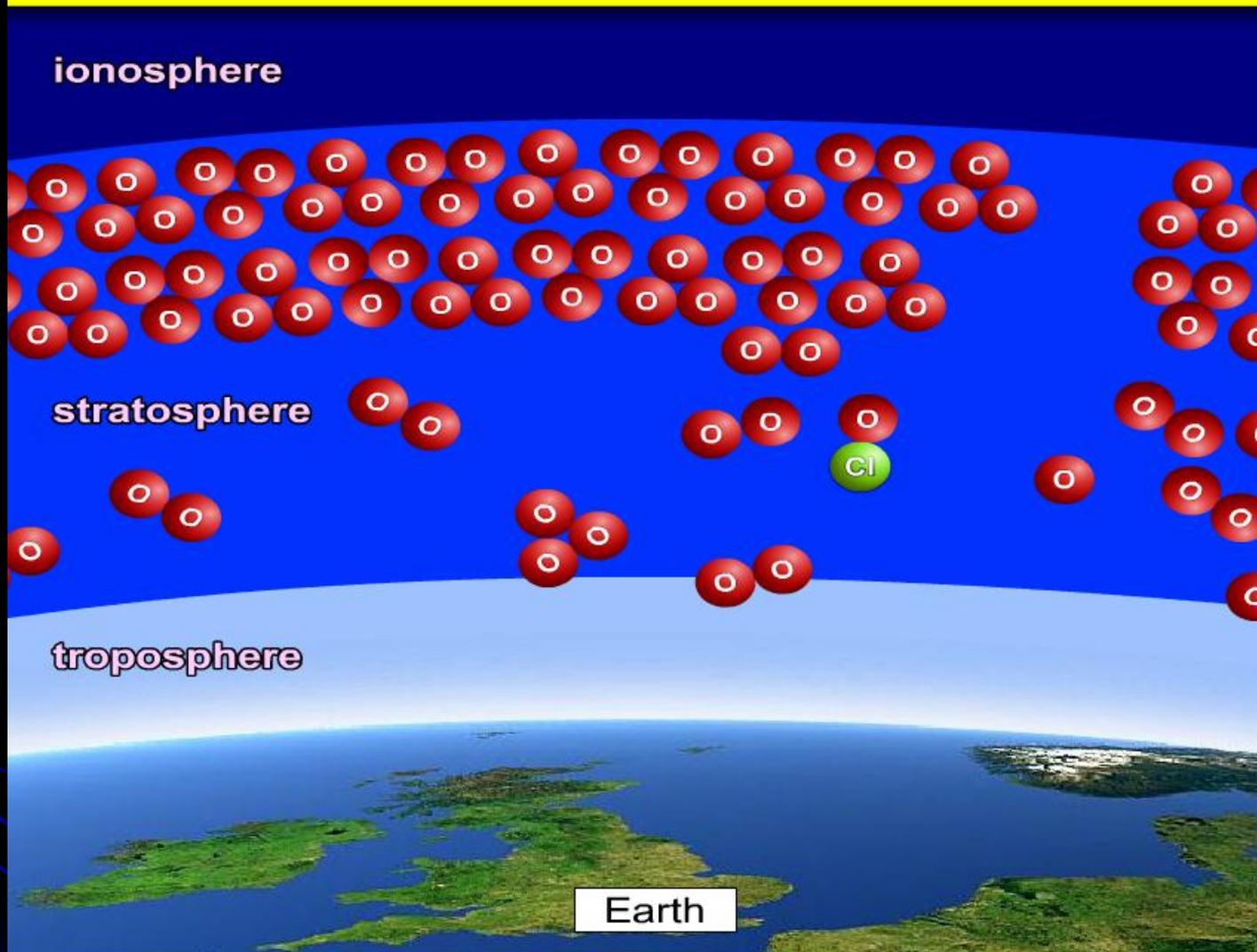
Chlorine atom acts on Ozone layer and form
Oxygen Molecule and Chlorine monoxide

Ozone Destruction



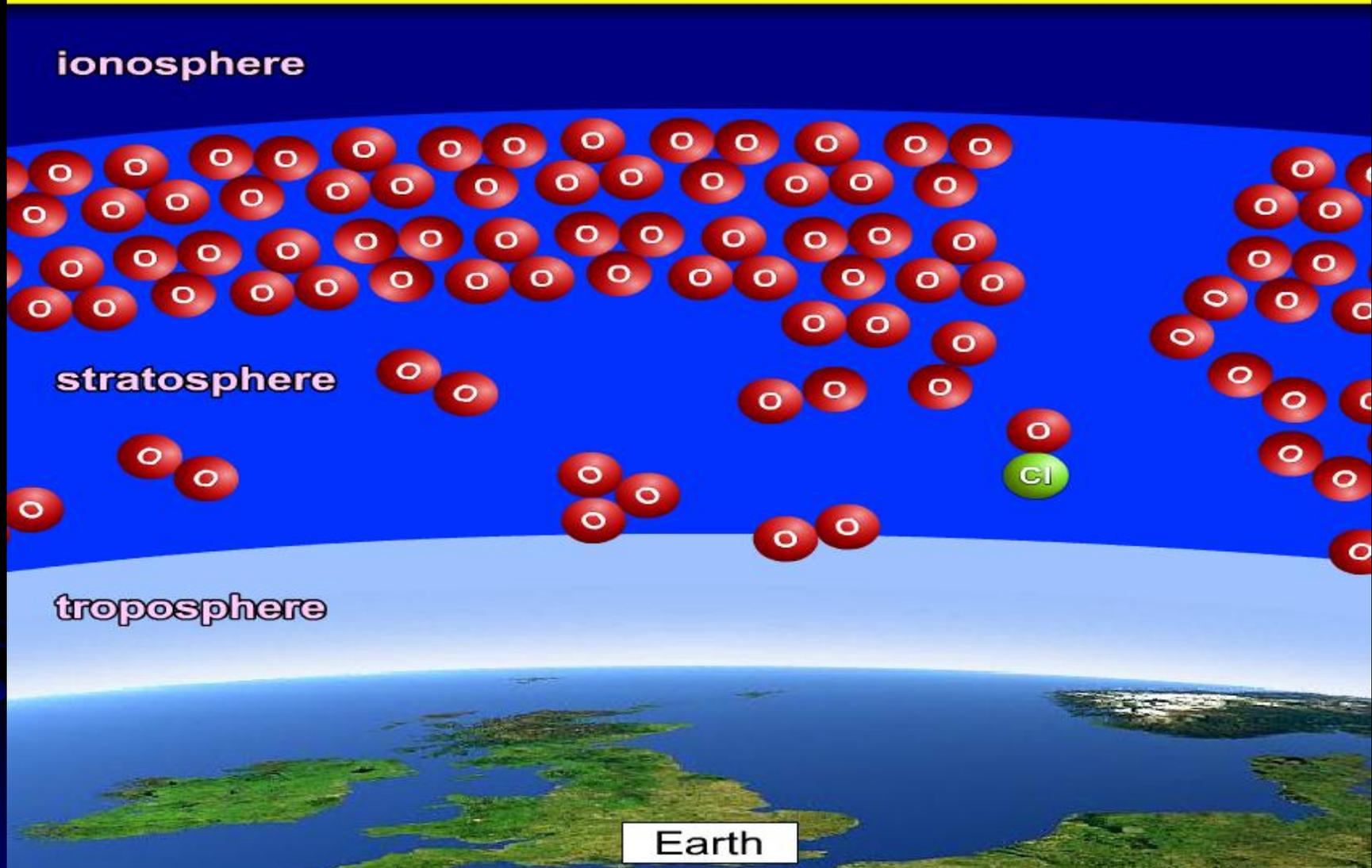
Chlorine monoxide reacts with oxygen atom to reform oxygen molecule and chlorine atom

Ozone Destruction



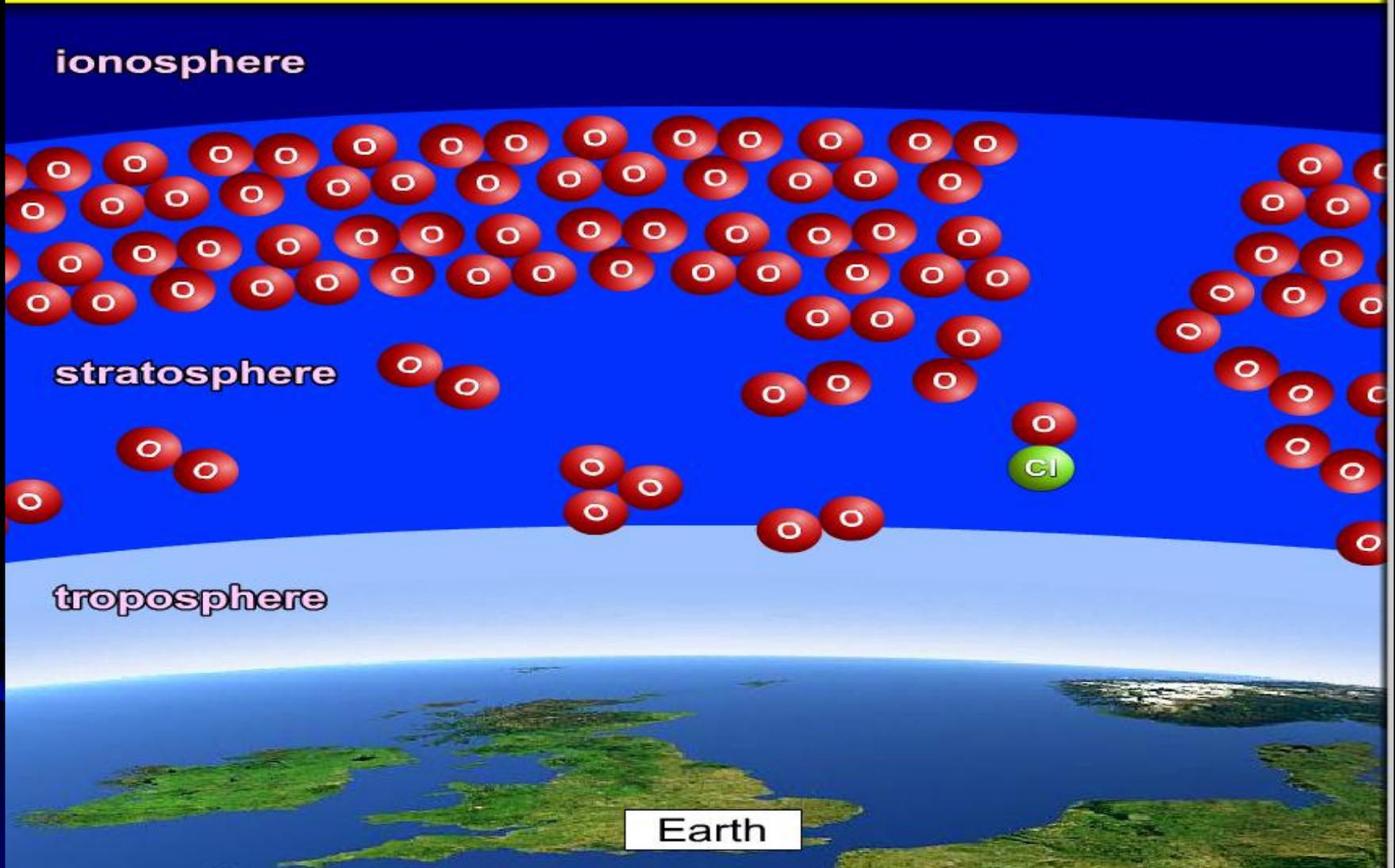
Chlorine atom destroy another ozone molecule and depletes another ozone molecule

Ozone Destruction



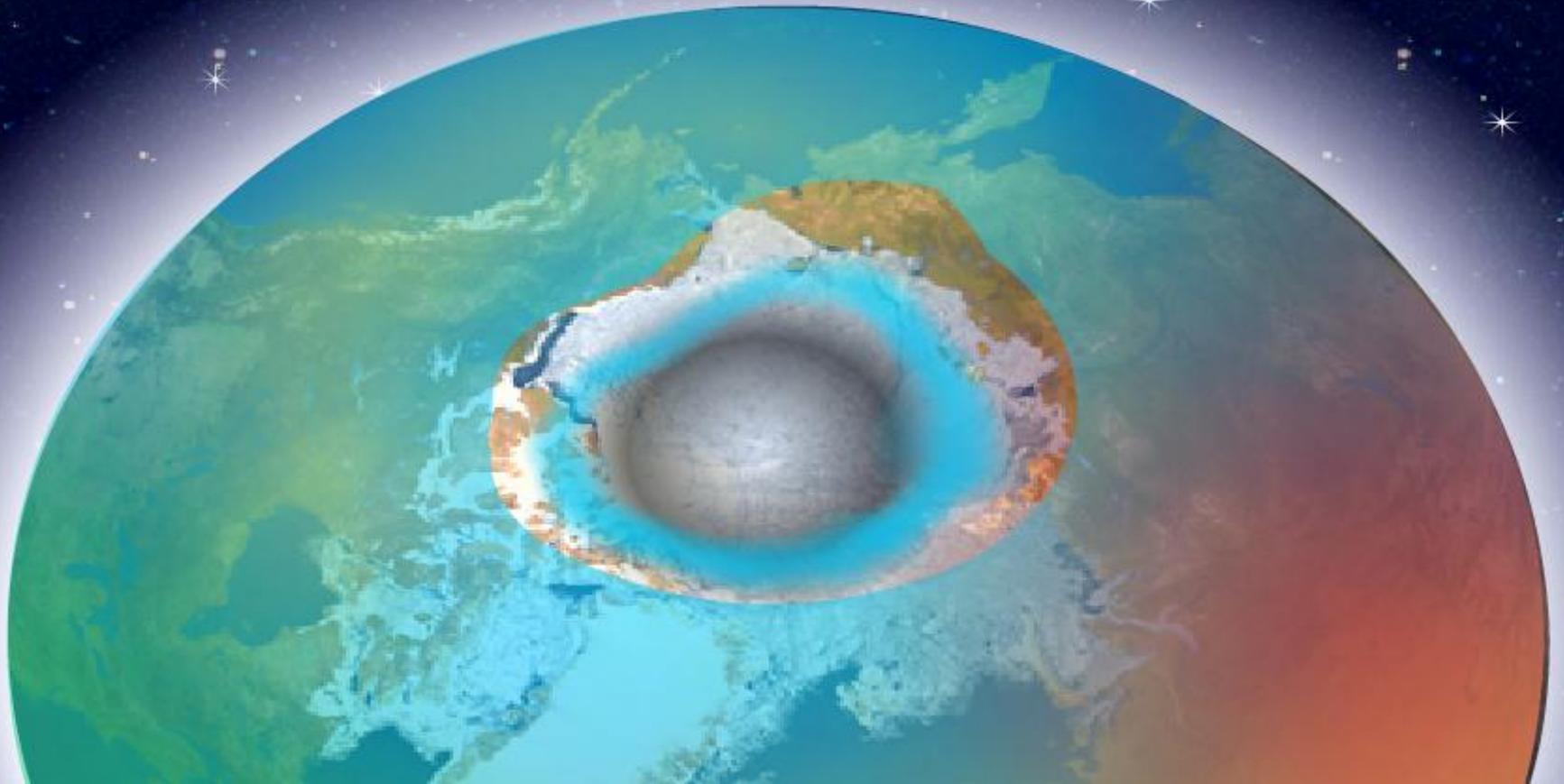
It reduces another oxygen atom that is used to form **OZONE**

Ozone Destruction

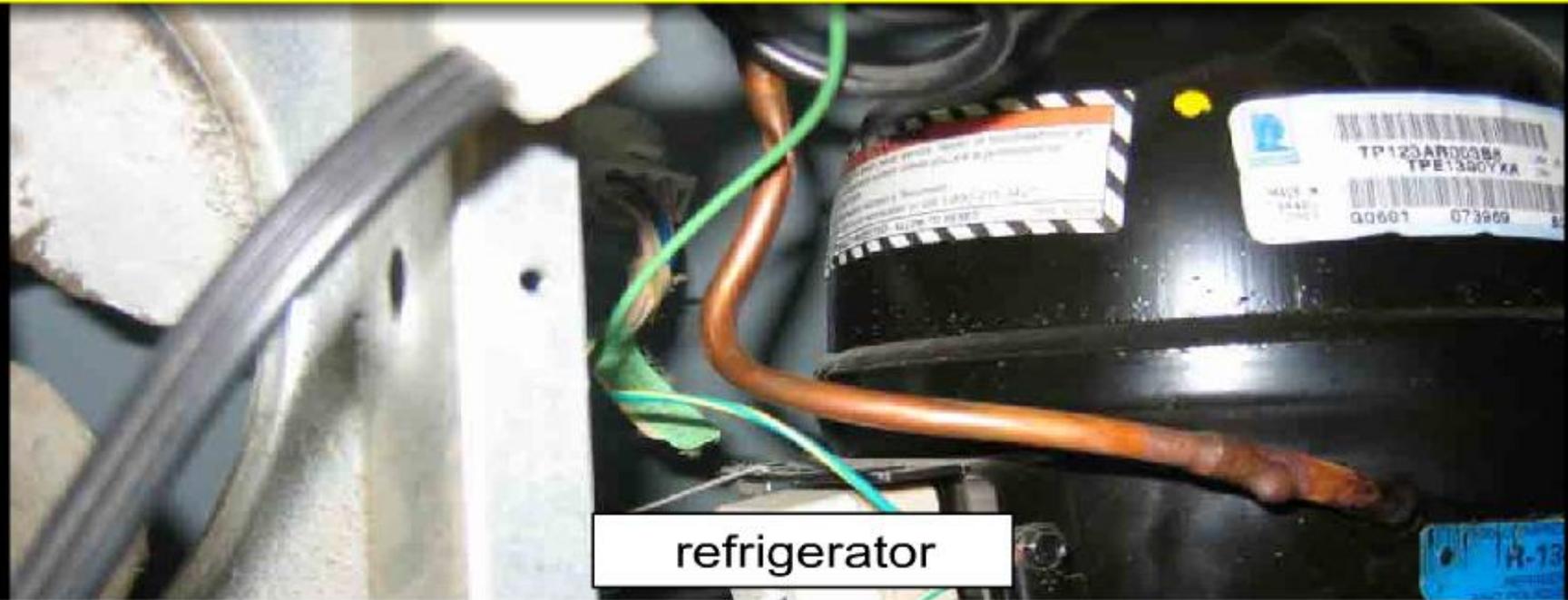


One Chlorine atom can destroy 100,000
ozone molecule

Ozone Hole Formation



Ozone Depleting Chemicals



refrigerator



air conditioner

Ozone Depleting Chemicals



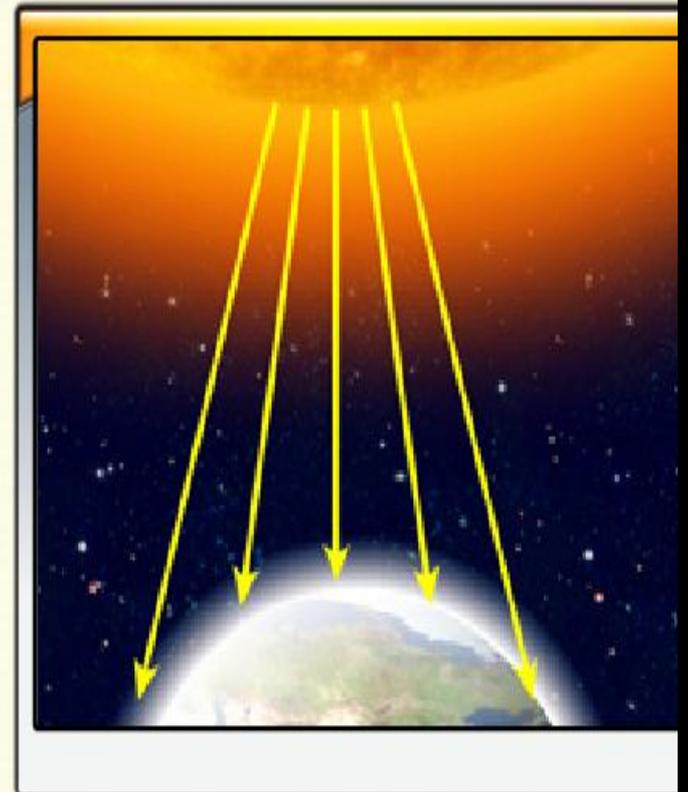
Ozone Depleting Chemicals



EXERCISE

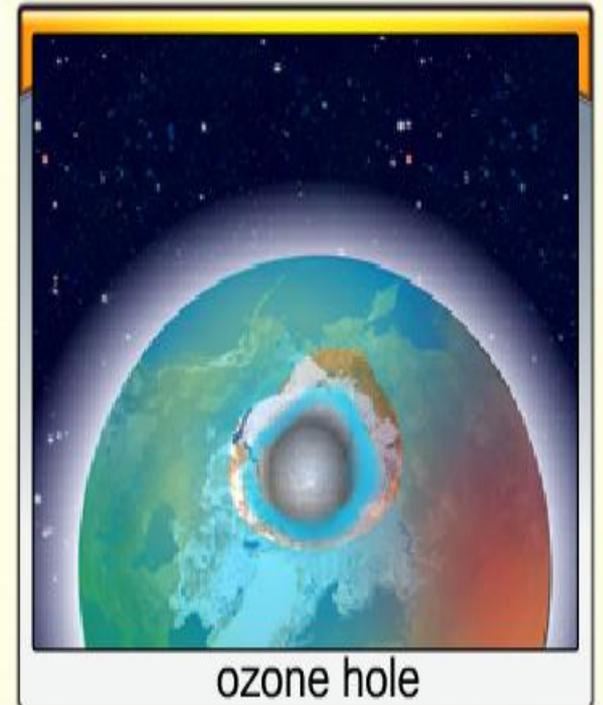
1. Why is the ozone layer in the stratosphere important?

- A** It produces oxygen in the atmosphere region.
- B** It destroys the carbon dioxide reaching the Earth.
- C** It allows the Sun's ultraviolet radiation to reach the Earth's surface.
- D** It absorbs the Sun's ultraviolet radiation that can harm living things.



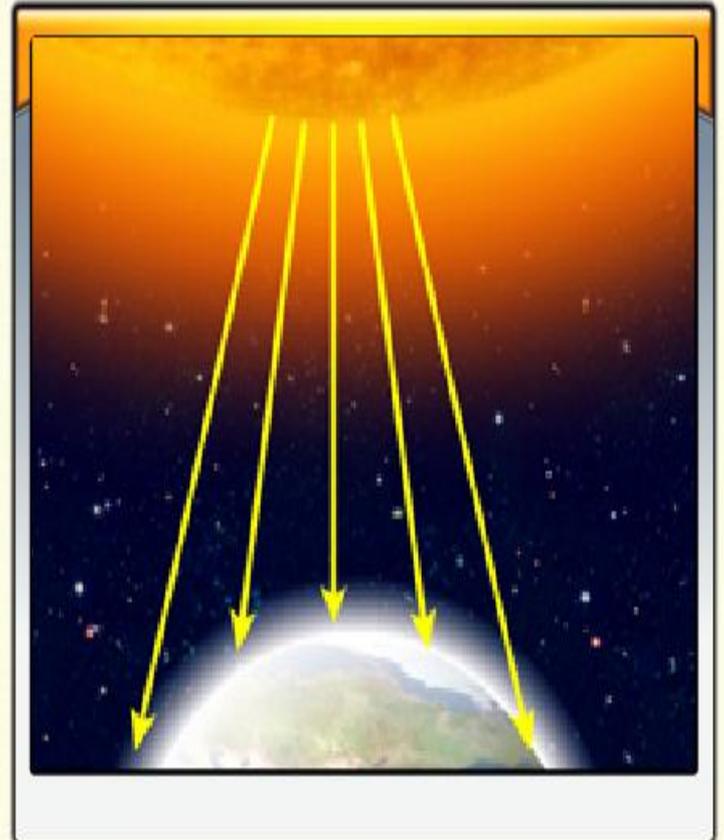
2. Which of the following is incorrect about the depletion of the ozone layer?

- A** Increase the risk of skin cancers.
- B** Increase ultraviolet radiation from the Sun.
- C** Decrease of oxygen in the atmosphere.
- D** Increase of chlorine atoms in the atmosphere.



3. Which of the following is not caused by the exposure to ultraviolet radiation from the Sun?

- A** Cataracts
- B** Skin cancer
- C** Kidney failure
- D** Damage to the immune system









Pollution Control

1. Control the use of fossil fuels
2. Control the disposal of industries waste
 - Enforce rules to control the disposal of gases and toxic waste
 - Treat toxic waste before disposed off
 - Radioactive waste should be stored in lead and concrete







Act



Protection of Wildlife Act 1972

National Forestry Act 1984





Examples of Preservation

- forest reserves
- national or state parks

- laws
- Protection of Wildlife Act 1972
 - National Forestry Act 1984

as individuals:

- avoid buying items made of animal parts

ENVIRONMENT

Preservation



forest reserve



wildlife sanctuary



marine park

Conservation



replanting



renewable energy



recycling



controlling pollution

Controlling the
Use of
Fossil Fuels

Controlling
Noise Pollution

Controlling the
Use of CFCs

**Enviromental
Pollution
Control**

Controlling the
Disposal of
Wastewater

Controlling the
Use of Chemical
Fertilizers and
Pesticides

Controlling
Solid Waste





cottonseeds

poultry manure



biopesticide



chemical pesticide

Ensure Survival of Living Organisms

Ensure Continuous Supply of Natural Resources

Importance of Preservation and Conservation

Provide Us Other Benefits and Quality of Life

Contribute to a Clean Environment and Control Pollution

1. Which of the following does not help to conserve the environment?

- A** Recycling the waste materials.
- B** Using biopesticides in agriculture.
- C** Using synthetic chemicals.
- D** Encouraging the uses of alternative energies.



2. Which of the following is a preservation method?

A Setting up of forest reserves and national parks.

B Recycling non-biodegradable materials.

C Replanting of trees.

D Reducing the use of CFCs.

3. Choose the items that can be recycled.

I. Old newspapers

II. Used aluminium cans

III. Polystyrene containers

A I only

B I and II only

C II and III only

D I, II and III



I



II



III