

OUR ENVIRONMENT

- **Introduction, Addition of waste to the environment**



**Dear students let us begin
another interesting lesson
from our syllabus**



OUR ENVIRONMENT

We have heard the word '*environment*' often being used on the *television*, in *newspapers* and by people around us.





What happens when we add our waste to the environment?



In our daily activities,
we generate a lot of
material that are
thrown away.

We have seen that the food *we eat is digested by various enzymes* in our body.

Enzymes are *specific in their action*, specific enzymes are needed for the *break-down* of a particular substance.



Fats



Proteins

Carbohydrates

A hand with light-colored skin and short, light-colored fingernails holds a wooden paintbrush with a white bristle tip. The hand is positioned as if it has just finished painting or is about to start. The background features a bright blue sky with white, horizontal brushstrokes suggesting clouds. In the foreground, there is a lush green field of tall grass and several white daisies with yellow centers. The overall composition suggests a creative or artistic theme.

**Let us understand this
concept with the help of
three examples**

The enzyme Trypsin :

Proteins



Fatty acids

Pancreatic amylase

Digests carbohydrates
into glucose

The enzyme
Pancreatic
amylase

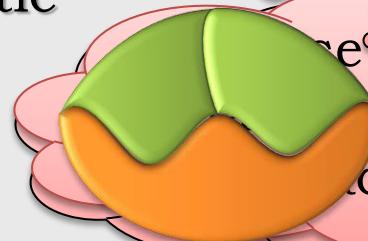
The enzyme Lipase :

Glucose

digests

to fatty

acid



Carbohydrates

Pancreatic
amylase

Thank You

OUR ENVIRONMENT

- **Biodegradable substances, Non-Biodegradable substances**

That is why we will not get any energy if we try to eat coal.

Because of this, many humans will not be able to digest coal. This is because the enzymes in our body are unsuitable to break down coal and release energy from it.



Because the body of bacteria and fungi lack the required enzymes.

These materials will be acted upon by physical processes like heat and pressure, but under the ***ambient conditions*** found in our environment, these persist for a long time.



A set of environmental parameters like heat, pressure, temperature, humidity etc.

Substances that are broken down by biological processes are said to be **biodegradable**.

include fruits, vegetables, leaves, paper, etc.



Substances that are not broken down in this manner are said to be ***non-biodegradable***.

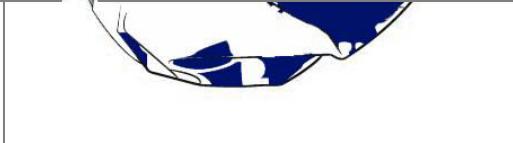
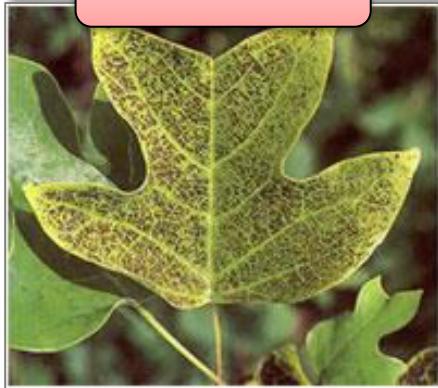
include aluminum cans, bottles, plastic products, metal scraps, glasses, etc.



Chemically inactive

- These substances may be ***inert***.
- They simply ***persist*** in the environment for a long time.
- Remain harm the various members of the eco-system.

Remain



Thank You

OUR ENVIRONMENT

- **Ecosystem, Types of ecosystems**

All organisms such as



Plants



Animals



Micro-organisms



Human beings



As well as the ***physical surroundings*** interact with each other and maintain a balance in nature.

All the interacting organisms in an area together with the *non-living* constituents of the *environment form an ecosystem.*

Ecosystems

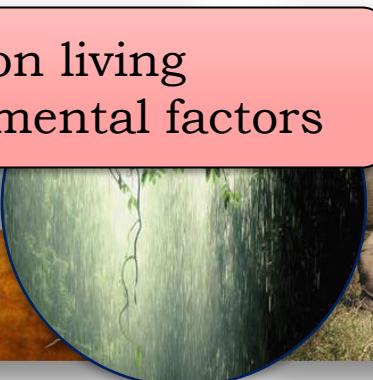


All these living organisms interact with each other and their ***growth***, ***reproduction*** and other activities, are affected by the ***abiotic components*** of ecosystem.

Non living
environmental factors



Temperature



Rainfall



Wind



Soil



Minerals

For example a garden is an ***ecosystem***.



Insect



Garden

All these living organisms interact with each other and their growth, reproduction and other activities are affected by the abiotic components of ecosystem.



Grass



Bird



Flowering tree



Frog

Some other *examples of ecosystems* are



Forest

Ponds

Lakes

Natural

Some other *examples of ecosystems* are



Crop-fields

Gardens

Artificial

Thank You

OUR ENVIRONMENT

- **Producers, Classification of consumers, Decomposers**



Now students, We have seen in earlier classes that organisms can be grouped as producers, consumers and decomposers according to the manner in which they obtain their sustenance from the environment.

Now, Let us
recall
what we have
learnt.....



Types of organisms

Producers

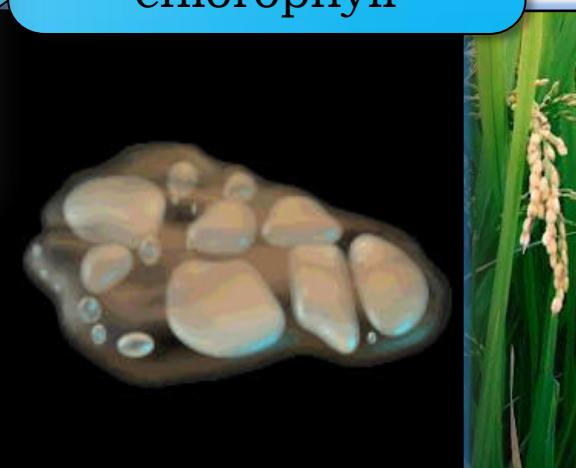
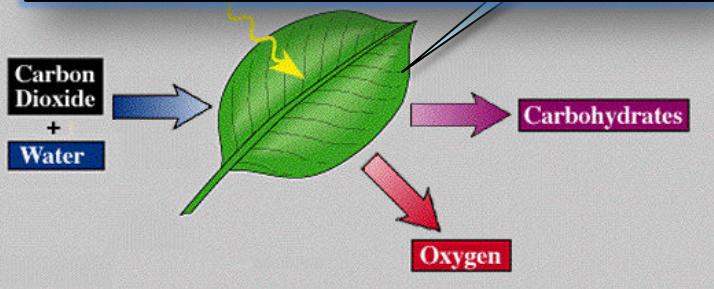


Like carbon dioxide gas and water

Carbon containing compounds

organic compounds like – sugar and starch from

They do this in the presence of chlorophyll

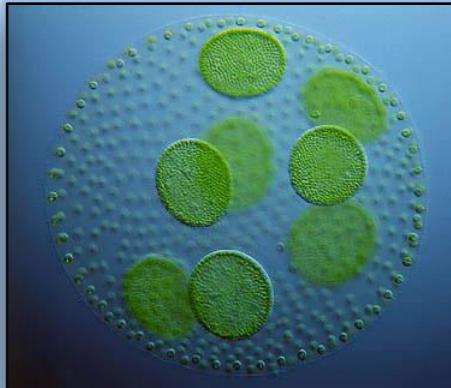


Types of organisms

Producers

All **green plants** and certain **blue-green algae** are examples of producers.

Because to trap sunlight they require chlorophyll

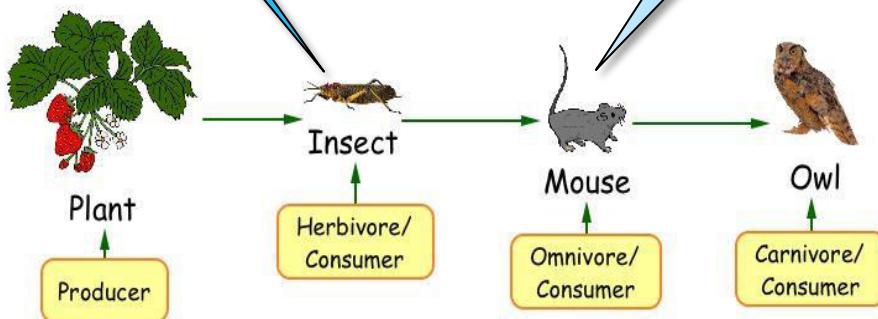


Organisms depend
on the producers
either directly or
indirectly for
their sustenance.



These organisms which consume the food produced, either directly from producers

or indirectly by feeding on other consumers are called as '**consumers**'.



Classification of consumers

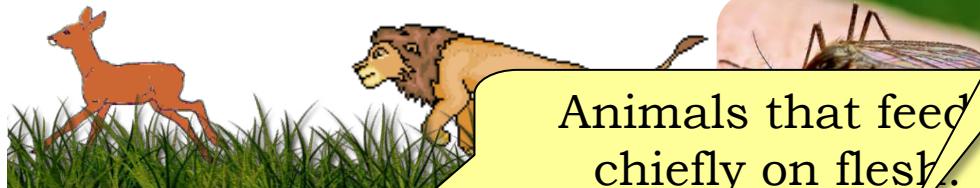


Herbivores

Animals that feed on grass or other plant

Omnivores

Omni means dual and omnivores means an organism eating both animal and vegetable food



Animals that feed chiefly on flesh.

Carnivores

Parasites

An animal or plant that lives on or in another organism from which it gets its food, always at the expense of the host.

Thank You

OUR ENVIRONMENT

- **Food chain, Unidirectional flow of energy**

Now let us
understand the
concept of
'Food Chain'...



Food chain

A number of

Interdependent

A series of organisms feeding on one another at various biotic levels form a **food chain**.

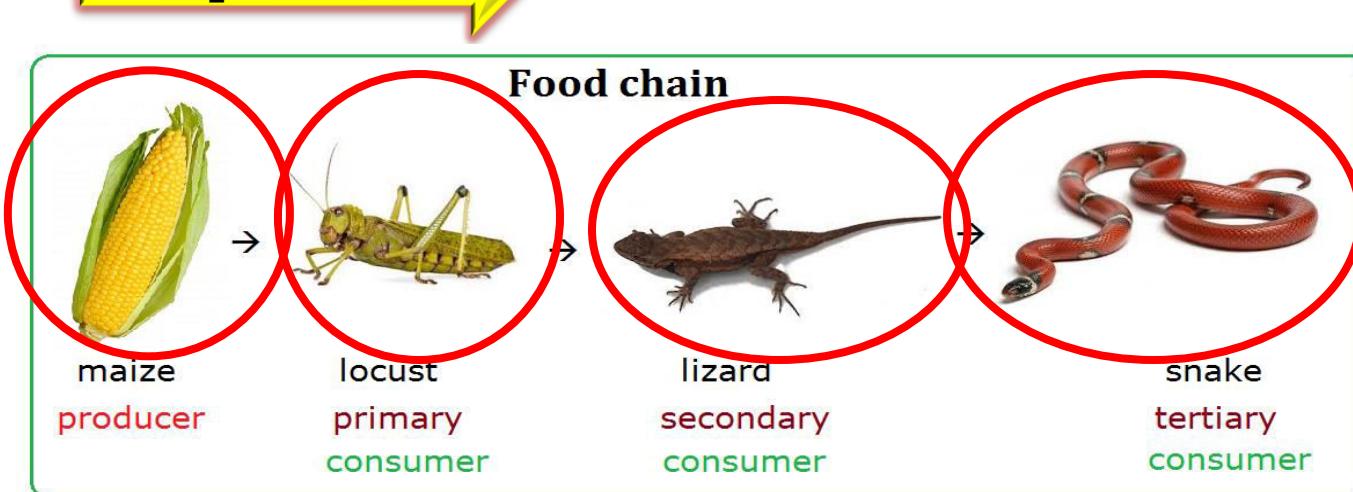


Food chain

Each step or level of the food chain **TROPHIC LEVEL**.

Related to nutrition

Trophic Levels

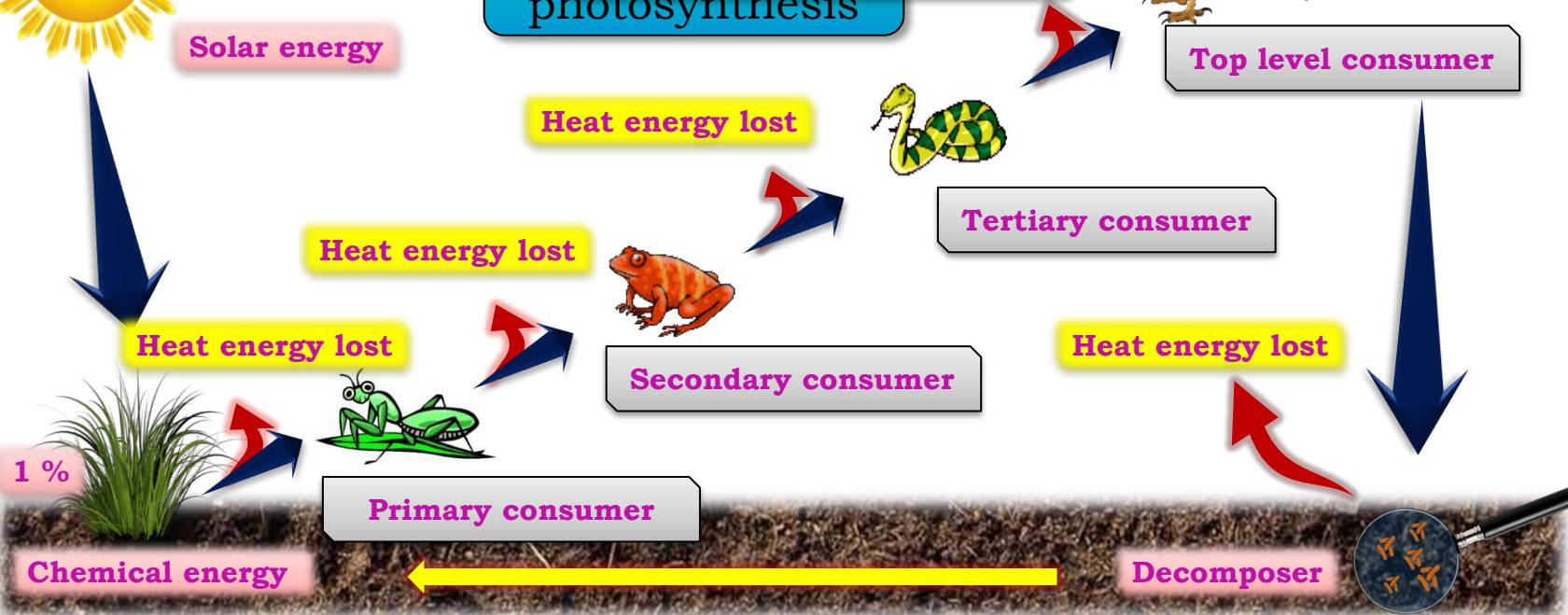


Food chain

Self-Harness is unidirectional



From autotrophs Only in one direction
heterotrophs and then decomposers.
the **consumers** by Different consumers
photosynthesis

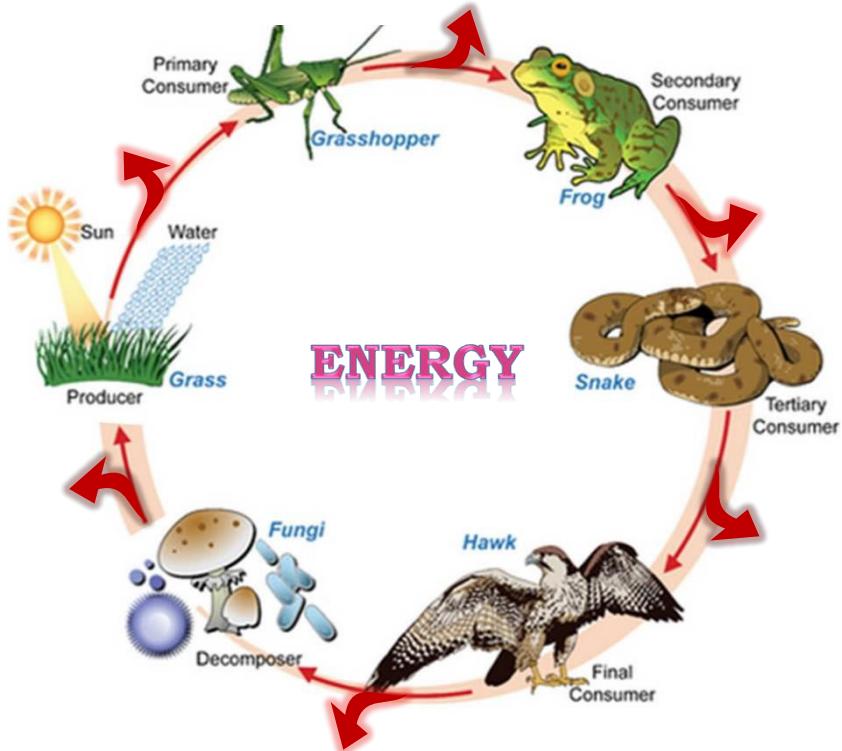


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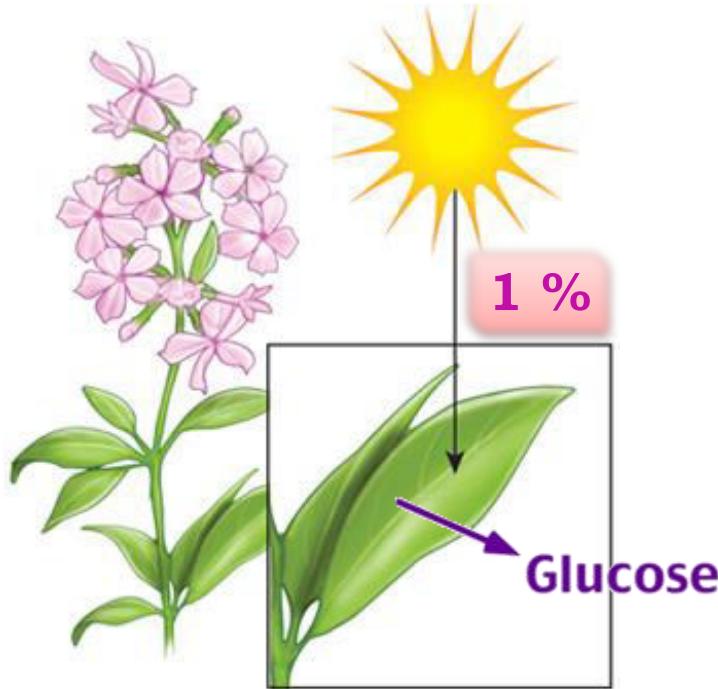
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- **Length of the food chain And flow of organic matter**

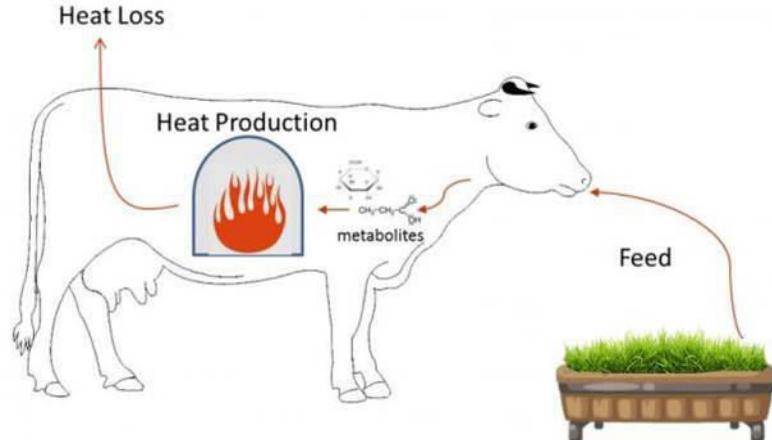
However, we know that, when one form of energy is changed to another, some energy is lost to the environment in forms which cannot be used again.



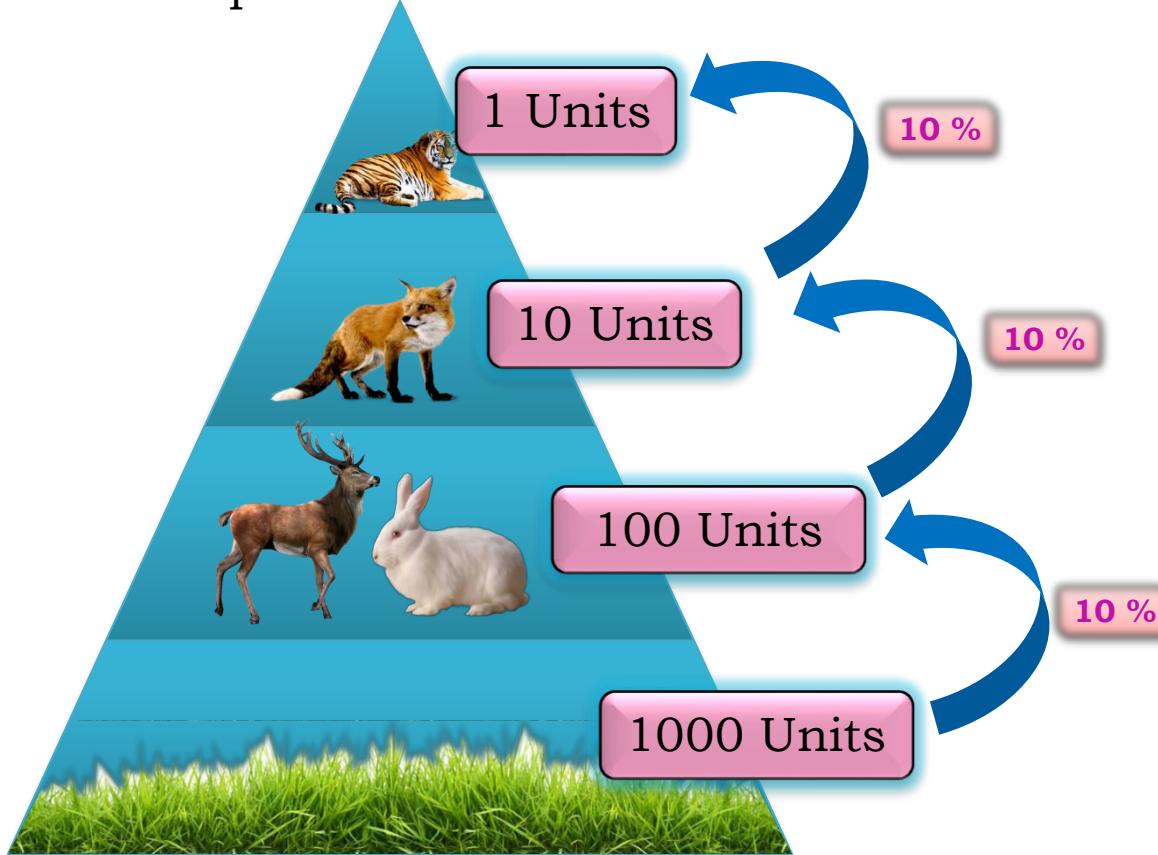
The green plants in a terrestrial ecosystem ***capture about 1% of the energy of sunlight that falls on their leaves*** and convert it into food energy.



When green plants are eaten by primary consumers, ***a great deal of energy is lost as heat to the environment, some amount goes into digestion and in doing work and the rest goes towards growth and reproduction.***

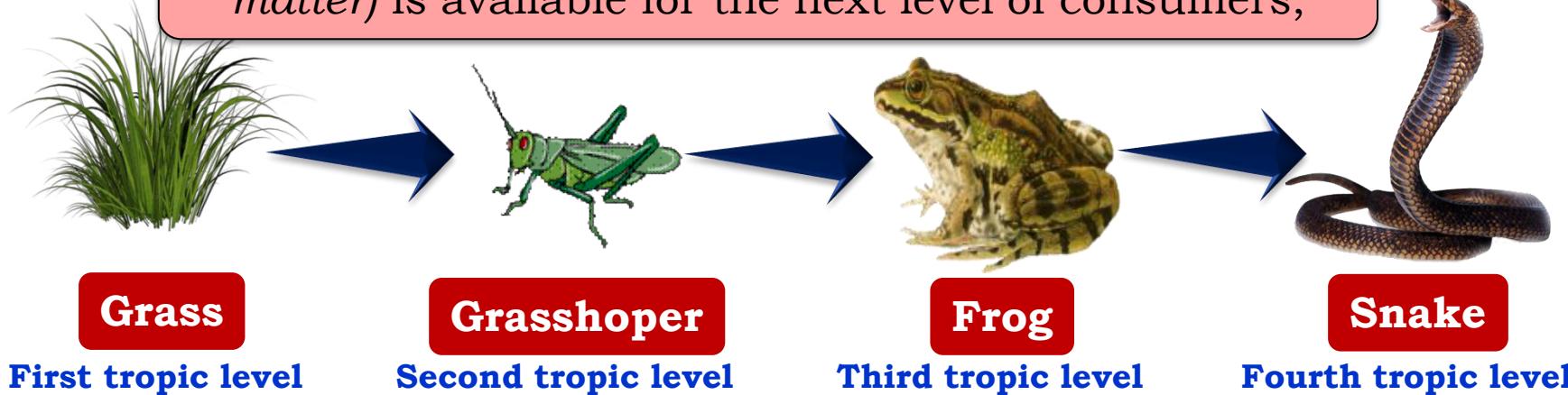


Only 10% amount of organic matter that is present at each step and **reaches** the next level of consumers.

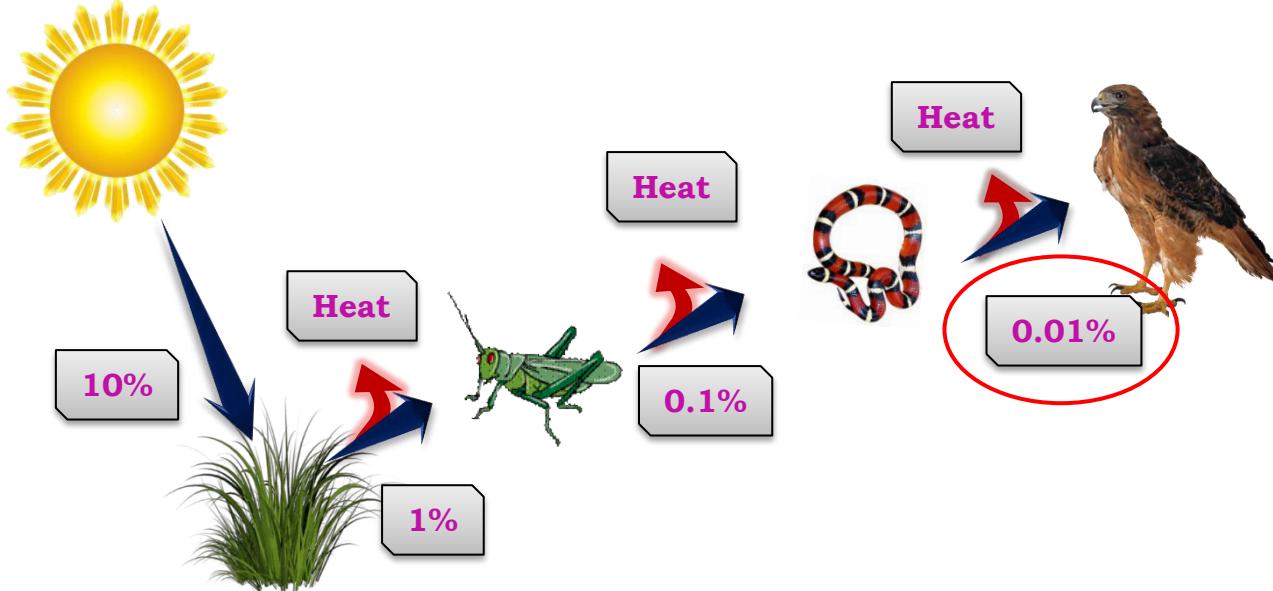


Food chains generally consist of only three or four steps.

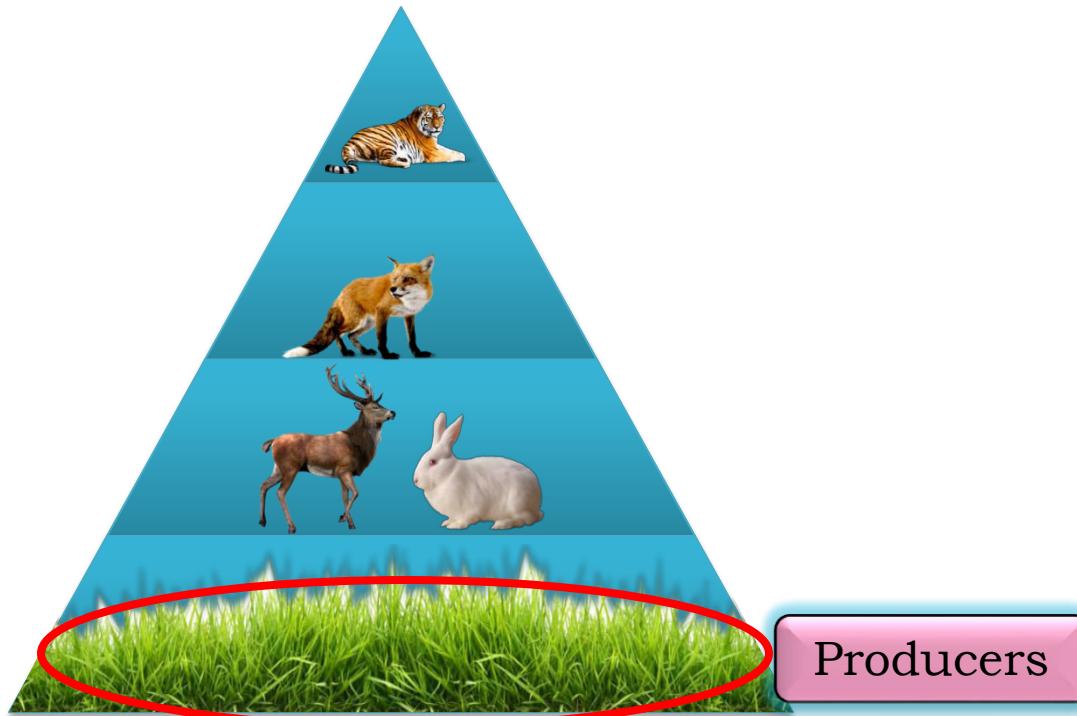
Since so little energy (*Only 10% amount of organic matter*) is available for the next level of consumers,



The loss of energy at each step is so great that ***very little usable energy remains after four trophic levels.***



There are generally a ***greater number of individuals at the lower trophic levels*** of an ecosystem, the ***greatest number is of the producers***.



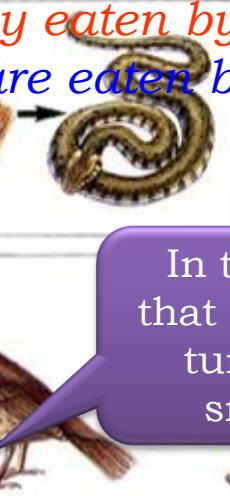
Thank You

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- **Food web, Biological magnification**

The length and complexity of food chains vary greatly.

Each organism is generally eaten by two or more other kinds of organisms which in turn are eaten by several other organisms.



In this example we can see that a frog eats insects and in turn it is been eaten by a snake or by a crocodile



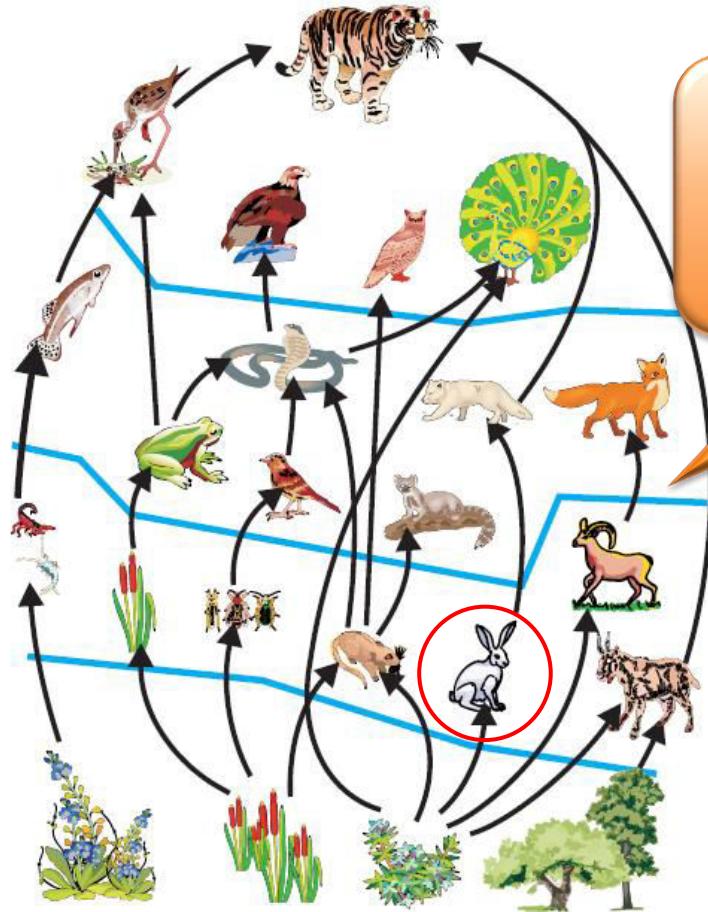
**Let us
understand this
with one more
example**

And in turn it is eaten
by a fox or an eagle



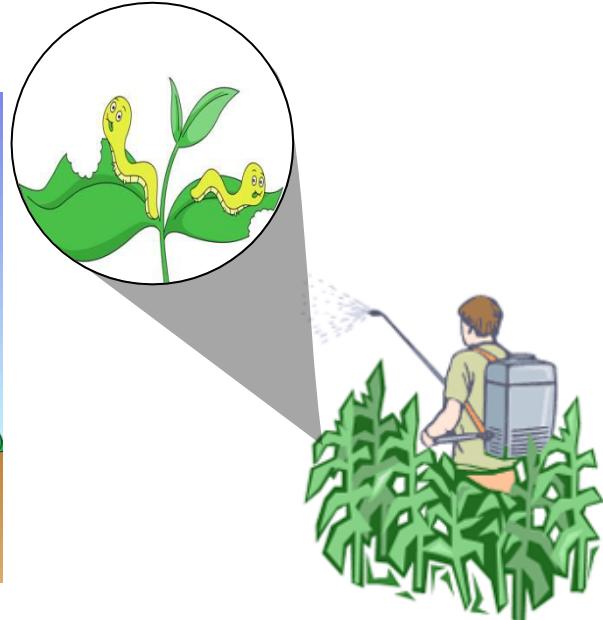
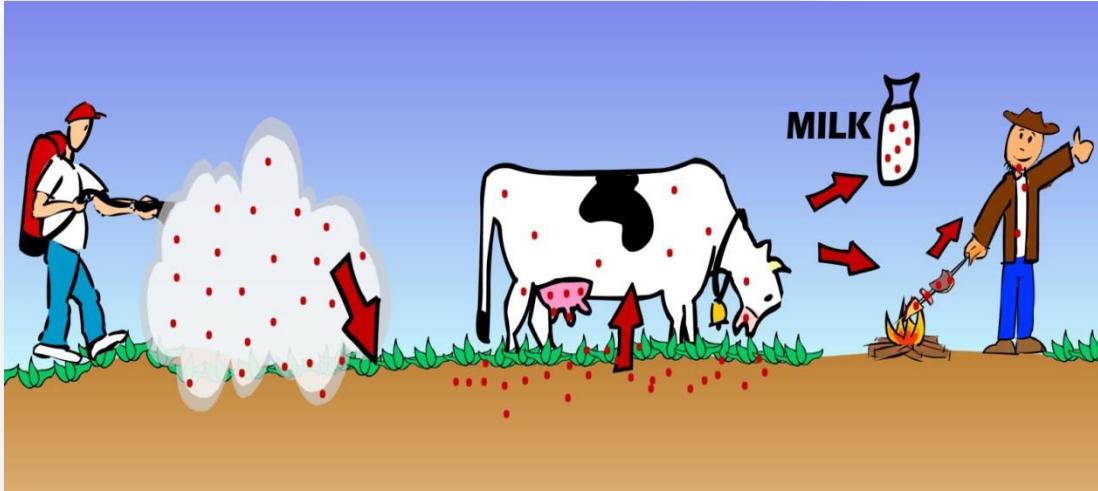
A rabbit eats
carrots or lettuce





So instead of a straight line food chain, the relationship can be shown as a series of branching lines called a ***food web***.

Biological magnification

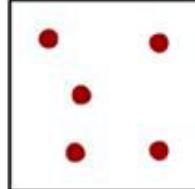
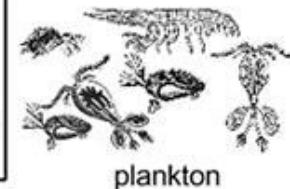
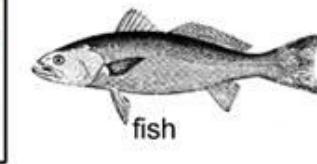
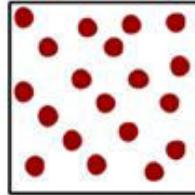
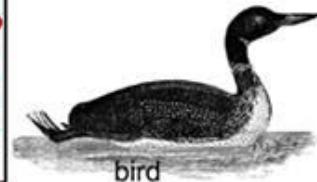
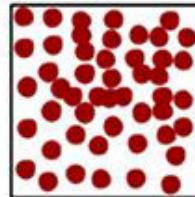


Some times harmful chemicals enter our body through the food chain.

We use pesticides and other chemicals to protect our crops from diseases and pest.



These chemicals are washed down into the soil or into the water bodies. From there they are absorbed by plants and animals.



water

As these chemicals are not degradable, they accumulated progressively at each trophic level.

This phenomena is known as '**Biological magnification**'

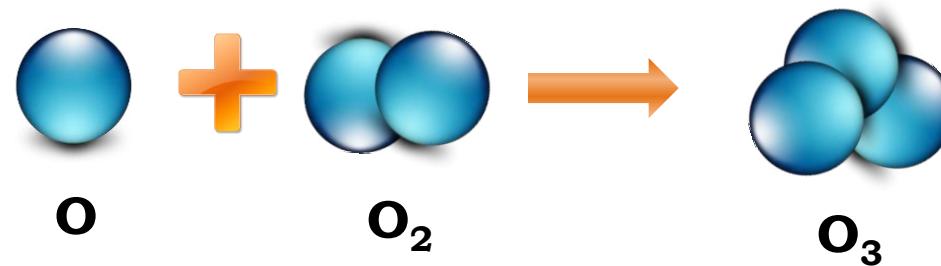
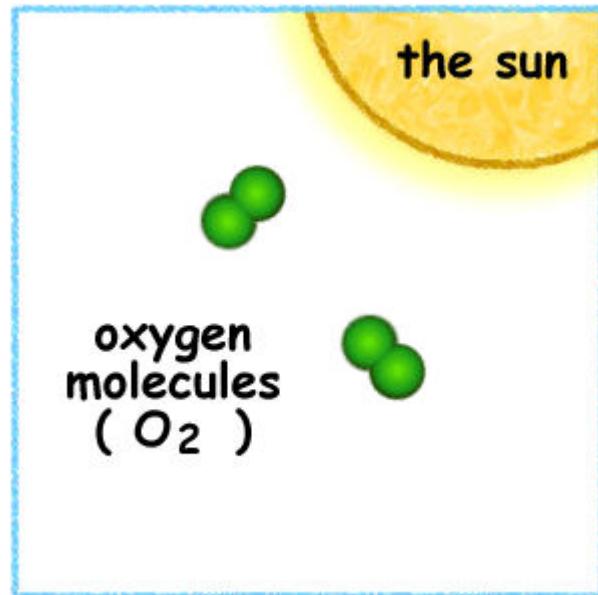
Thank You

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- **Formation of Ozone, Ozone Layer, Waste Material Management**

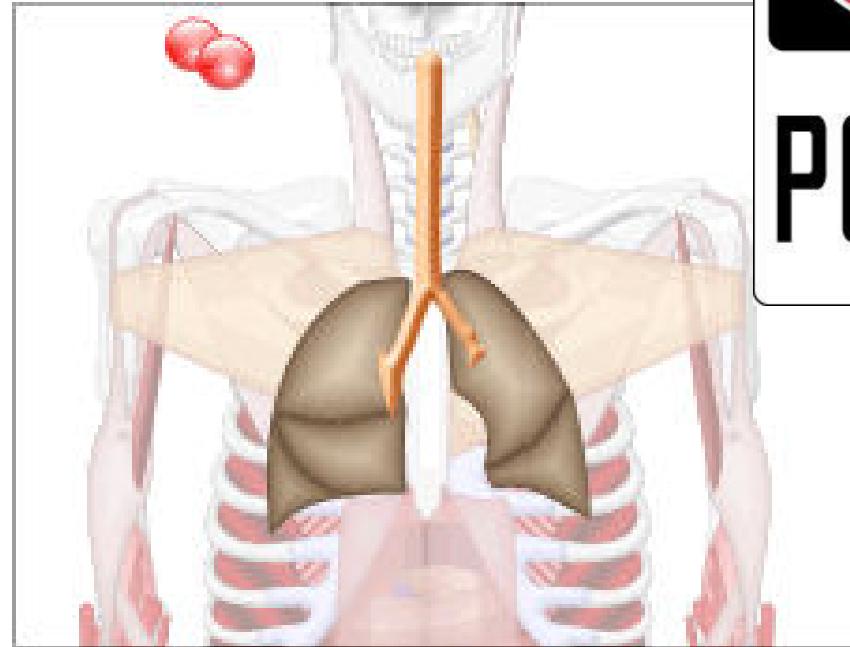
Formation Of Ozone In Stratosphere

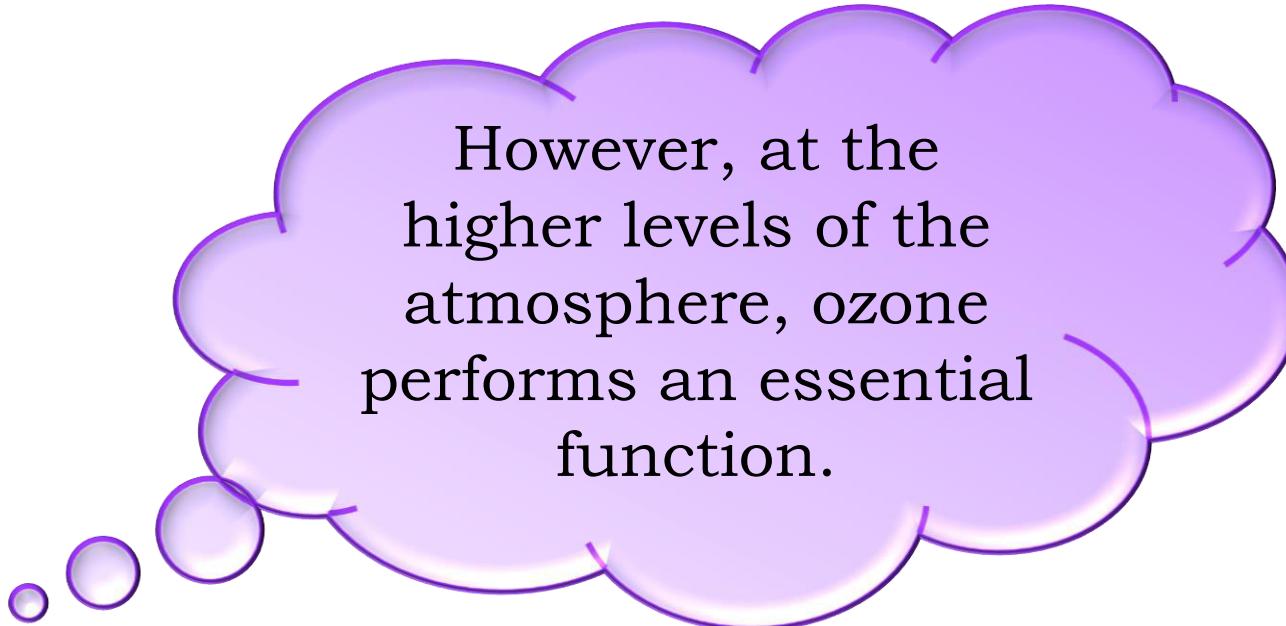
Ozone (O_3) is a molecule formed by **three atoms of oxygen**.



While O₂, which we normally refer to as oxygen, is essential for all aerobic forms of life.

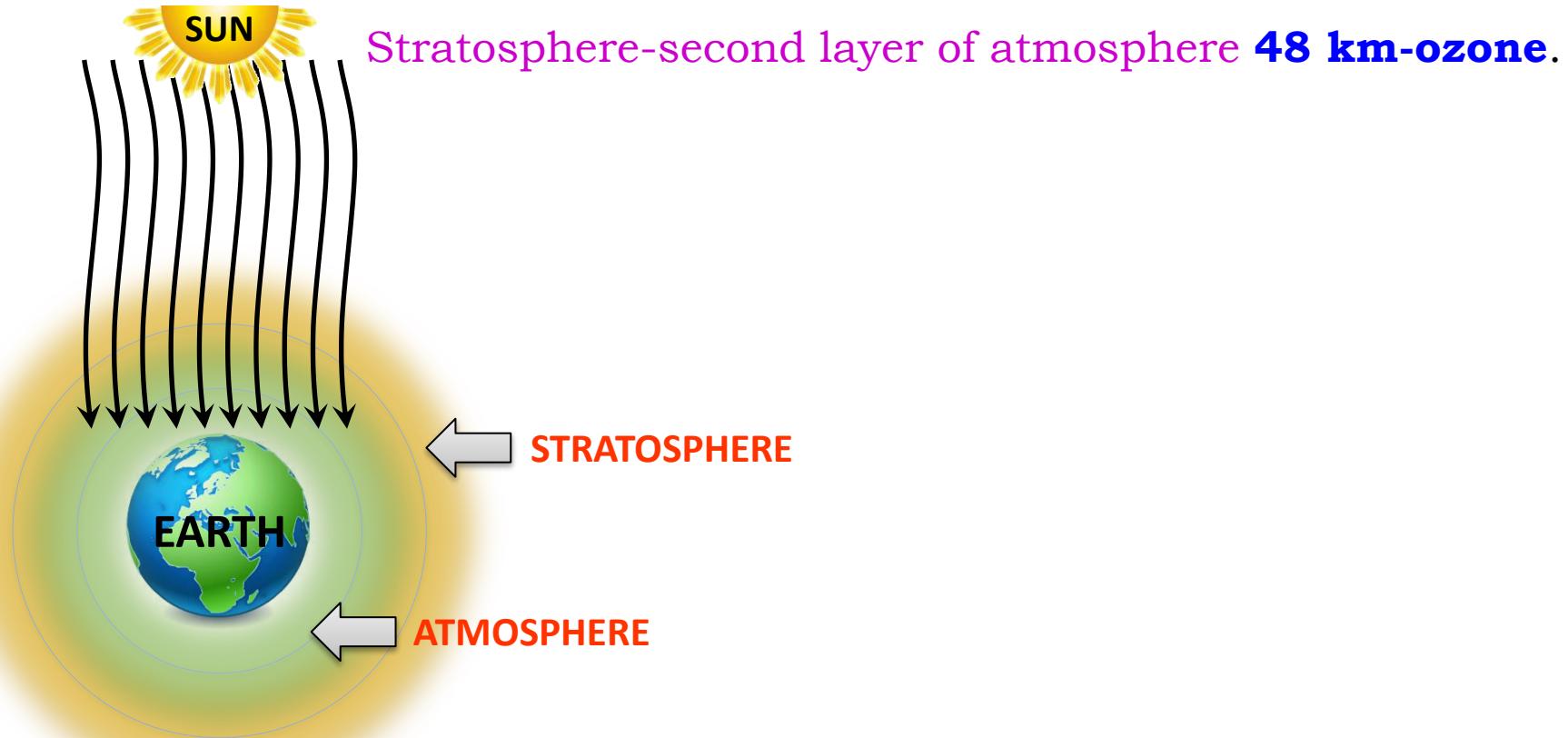
Ozone, is a **deadly** poison.





However, at the higher levels of the atmosphere, ozone performs an essential function.

It shields the surface of the earth from ***ultraviolet*** (UV) radiation from the Sun.



This radiation is highly damaging to organisms, for example, it is known to cause skin cancer in human beings.

Ozone absorbs harmful UV rays from the sun.

Protects plant and animals.



The amount of ozone in the atmosphere began to drop sharply in the **1980s**.

This decrease has been linked to synthetic chemicals like **chlorofluorocarbons (CFCs)**

Which are used as *refrigerants* and in fire *extinguishers*.

CALENDAR

1980



In **1987**, the ***United Nations Environment Programme (UNEP)*** succeeded in forging an agreement to freeze **CFC** production at **1986** levels.



Managing the Garbage we Produce

Improvements in our life-style have resulted in greater amounts of waste material generation.

Changes in attitude also have a role to play, with more and more things we use becoming disposable.

Changes in packaging have resulted in much of our waste becoming non-biodegradable.



Thank You