

Environmental health



PRESENTED BY:



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Rules





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By the end of this lecture, each student will be able to:

- ❑ Define fundamental terms related to environmental health.
- ❑ Discuss The 7 Core Concepts related to the environment
- ❑ Discuss environmental system (components).
- ❑ Explain the types of environment
- ❑ Determine the environmental hazards.
- ❑ Discuss the current environmental problems.
- ❑ Discuss the role of community health nurse



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Introduction

The **air** we breathe, the **water** we drink, and the **food** we eat, the **places** we work, and the **homes** we live in all aspects of our **natural** and **man-made environment** have an impact on our **health**. Complex **interactions** between human genetics and our physical surroundings can give rise to a variety of **diseases and health conditions**.



What is Environment?

- The term **environment** comes from the French word (**environ**) and means **every thing** that **surround us**.
- The **totality** of the surrounding conditions for comfortable living of organism.
- It is collective term used to describe **all the living & nonliving** things. That makes up our surrounding these include the **biological, physical, cultural and social**.



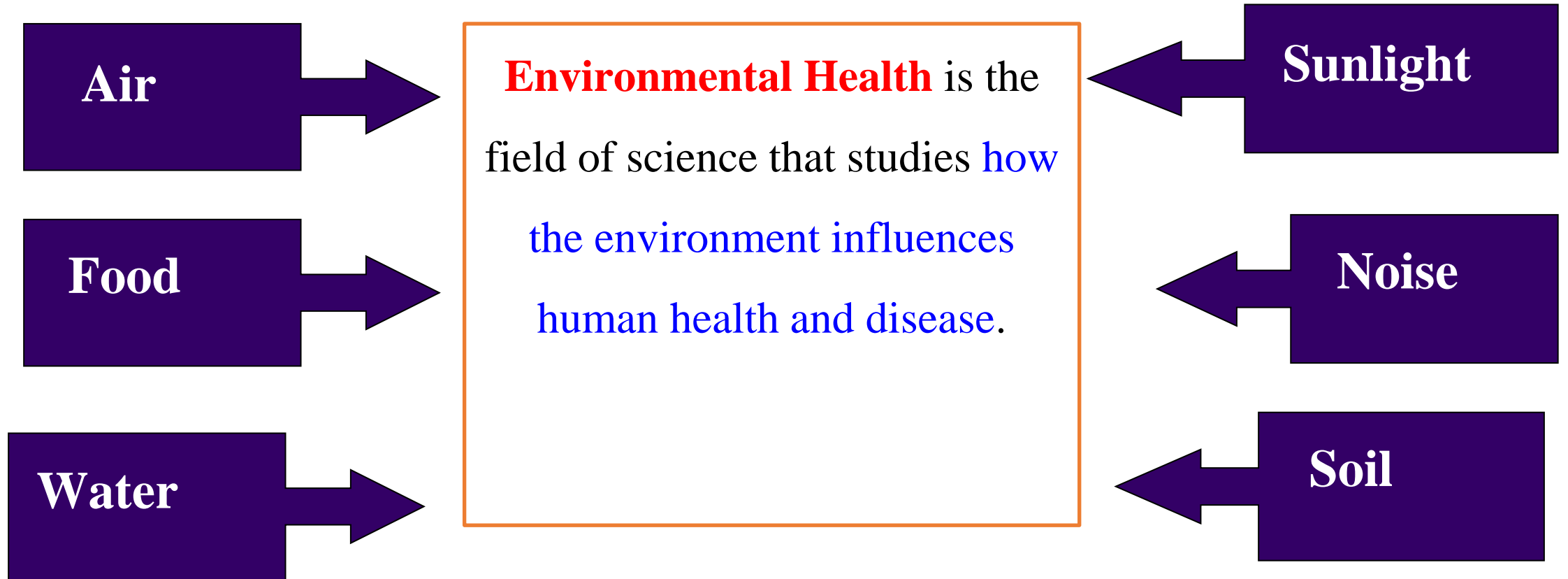
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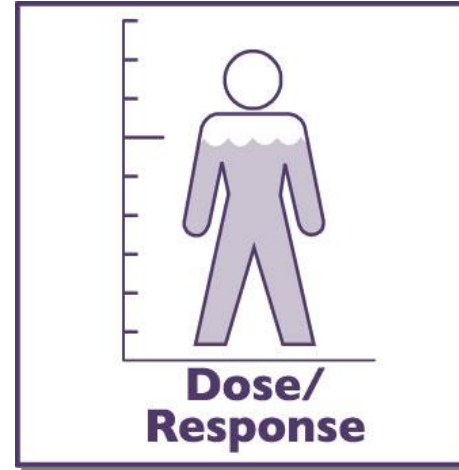
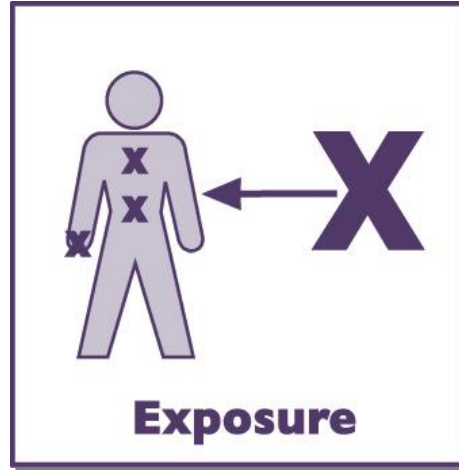
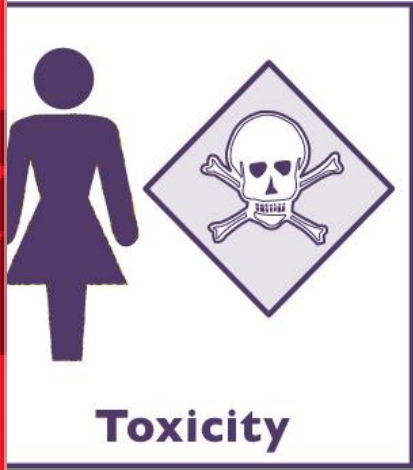
Environment include all the things around us with which we interact:

- ❑ **Living things:** Animals, plants, forests, fungi, etc.
- ❑ **Non-living things:** Continents, oceans, clouds, soil, rocks.
- ❑ **Our built environment:** Buildings, human-created living centers.
- ❑ **Social relationships** and institutions

Definition of Environmental Health



The 7 Core Concepts related to the environment



Toxicity

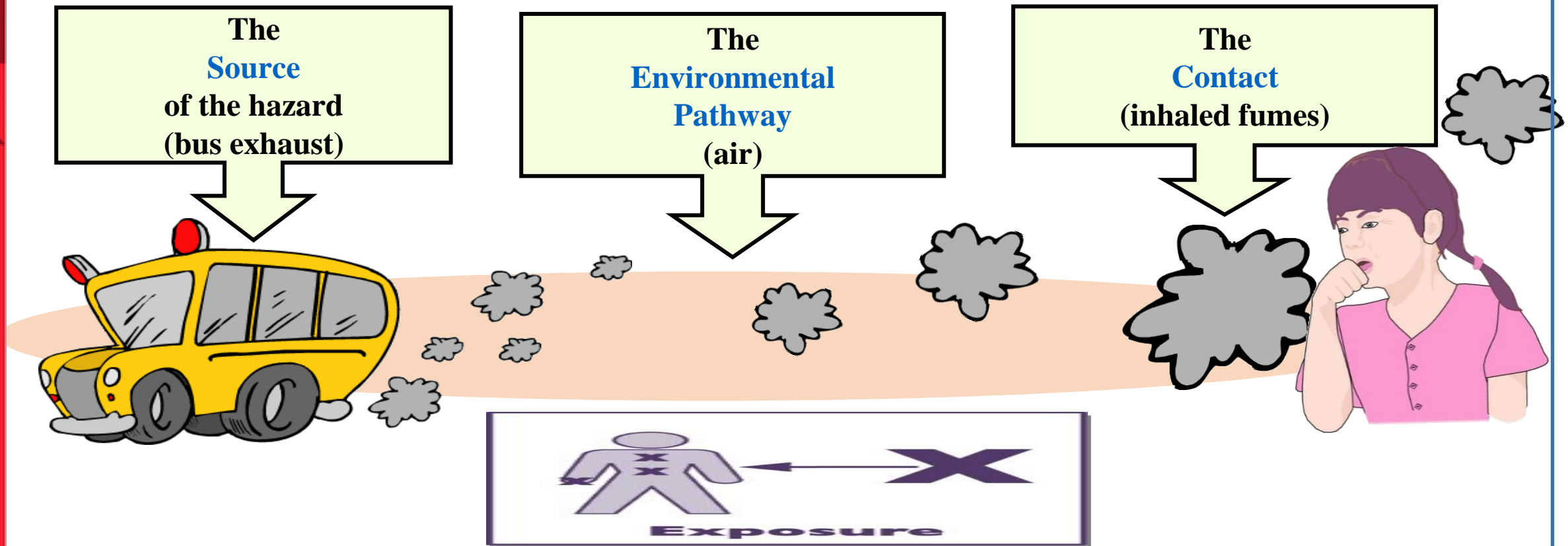
- **Toxic:** means poisonous or dangerous.
- **Toxicology:** is the study of poisons.
- **Toxicity:** is a **measure** of how dangerous a chemical is.

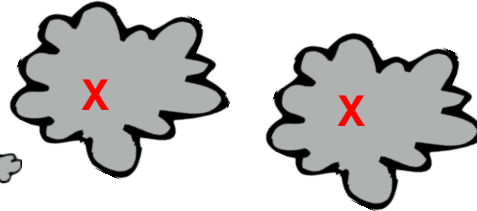
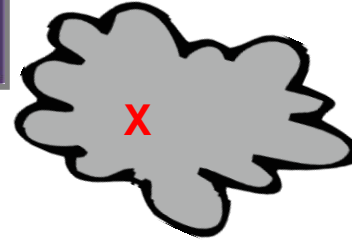


Or specific **degree** of being toxic or poisonous.

Exposure is the total amount of a **hazard** that comes in **direct contact** with your body.

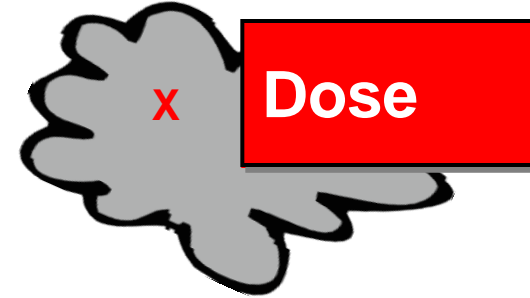
The 3 parts of exposure



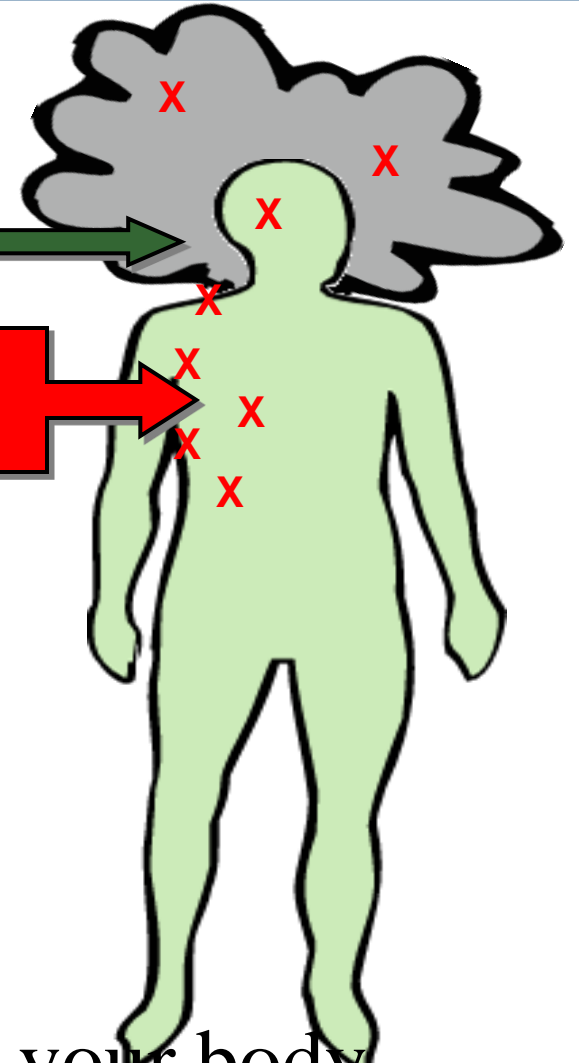


X = hazard

Exposure



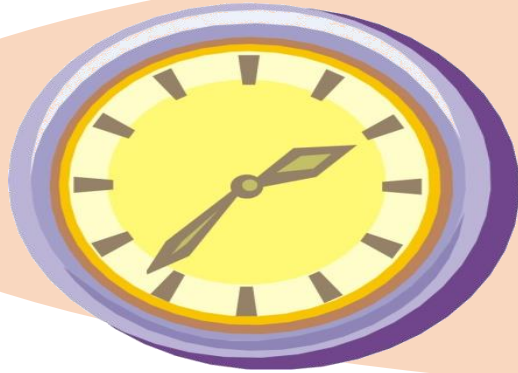
Dose



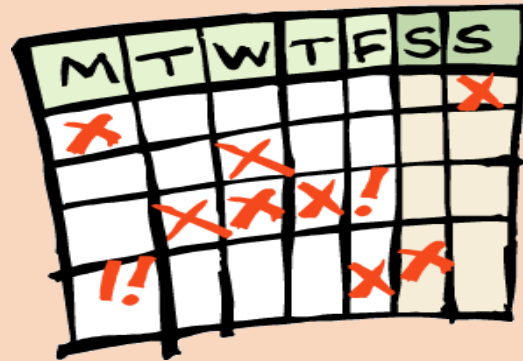
Dose is the **amount** of a hazard that actually enters your body.

Dose can depend on...

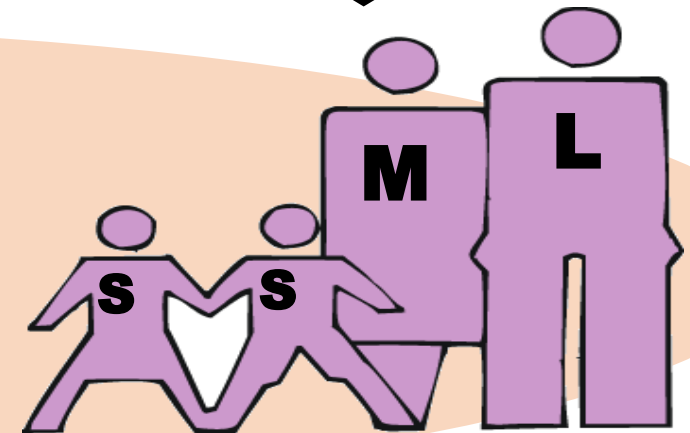
**Duration of
Exposure:**
How long?



**Frequency of
Exposure:**
How often?



Body Size:
How big or small
are you?



Individual Susceptibility

“At risk of infection by a pathogen”.



Pregnant women and
their developing babies



Elderly people whose
defense mechanisms are
less efficient



Sick people who have
weakened immune
systems



Infants and children
who are still
developing

Risks and benefits is a comparison between the risks of a situation and its benefits.

Ex: **Risks** and **Benefits** of using pesticides :

Risks

- People & animals ingest pesticides and get sick.
- Pesticides get into air and water.

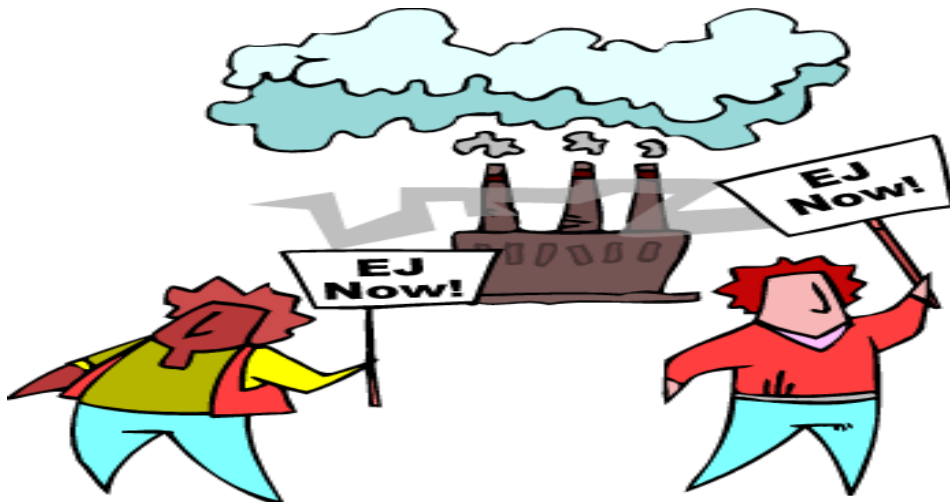


Benefits

- Better looking fruit that is more visually appealing.
- Bigger crops so farmers can make more profit.



- **Environmental Justice** (EJ) means that everyone has a right to live in an environment that doesn't make them sick, regardless of their race, culture, or income.





Community action includes a broad range of activities and is sometimes described as 'social action' or 'community engagement'. These activities can vary in their objective, the role the community plays, the types of activities involved.





OUR ENVIRONMENT

It is the combination of the
NON-LIVING components



Air



Soil



Water

PHYSICAL
ENVIRONMENT



ENVIRONMENT



It is the combination of the
LIVING components

BIOLOGICAL
ENVIRONMENT

Types of Environment

❖ **Environment** has three types: physical, biological and social.

1.

- **Physical (a biotic) Environment**

2.

- **Biological (biotic) Environment**

3.

- **Social and cultural Environment**

ABIOTIC

The diagram illustrates the five kingdoms of life, each represented by an oval containing a representative organism and a label below it:

- Protists:** An oval containing a drawing of an amoeba-like organism with a nucleus and cilia.
- Plants:** An oval containing a drawing of a green plant with leaves and a yellow flower.
- Animals:** An oval containing a drawing of a white goat.
- Fungus:** An oval containing a drawing of a brown mushroom.
- Bacteria:** An oval containing a drawing of various microscopic bacterial cells, including cocci and bacilli.

Non Living Things



Biotic factors are living, while abiotic factors are non-living.



1. Physical environment

- **Physical environment** is also called **Abiotic natural**, and **geographical** environment.
- **Abiotic** environment can be listed through **SWATS** : **S**oil, **W**ater, **A**ir, **T**emperature, and **S**unlight.
- These are called **lithosphere**, **atmosphere** and **hydrosphere**.



Importance of physical environment

- To have a healthy life we need fresh air, clean water, and surrounding.
- Soil is one of the component of environment. It is useful for the growth of plants which are source of food and clothing requirements.
- Many medicines from the nature which cause no side effects than artificial drugs.

2. Biological Environment

- It is also known as the **biotic** dimension of the environment, this dimension of the environment comprises of **all living beings** including **micro-organisms, plants, animals** and above all **man**.



Biological Environment classified to :

Flora : **plants** occur in various forms such a woodland, forests, grasslands etc.

Fauna : our earth is inhabited by millions of **animals**.

Plants are primary **producers**, **animals** are primary and secondary **consumers**.



Importance of biological environment

- All **living organisms** are dependent on each others.
- **Human** depend on plants and trees for food and oxygen.
- **Plants** and trees depend on human and animals for Co₂.

3. Social and cultural environment

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It is also known as **cultural or man-made** environment.

It is concerned with the **social behaviors** of the organisms, it include:
housing, transportation, industries....



Importance of Social and Cultural Environment

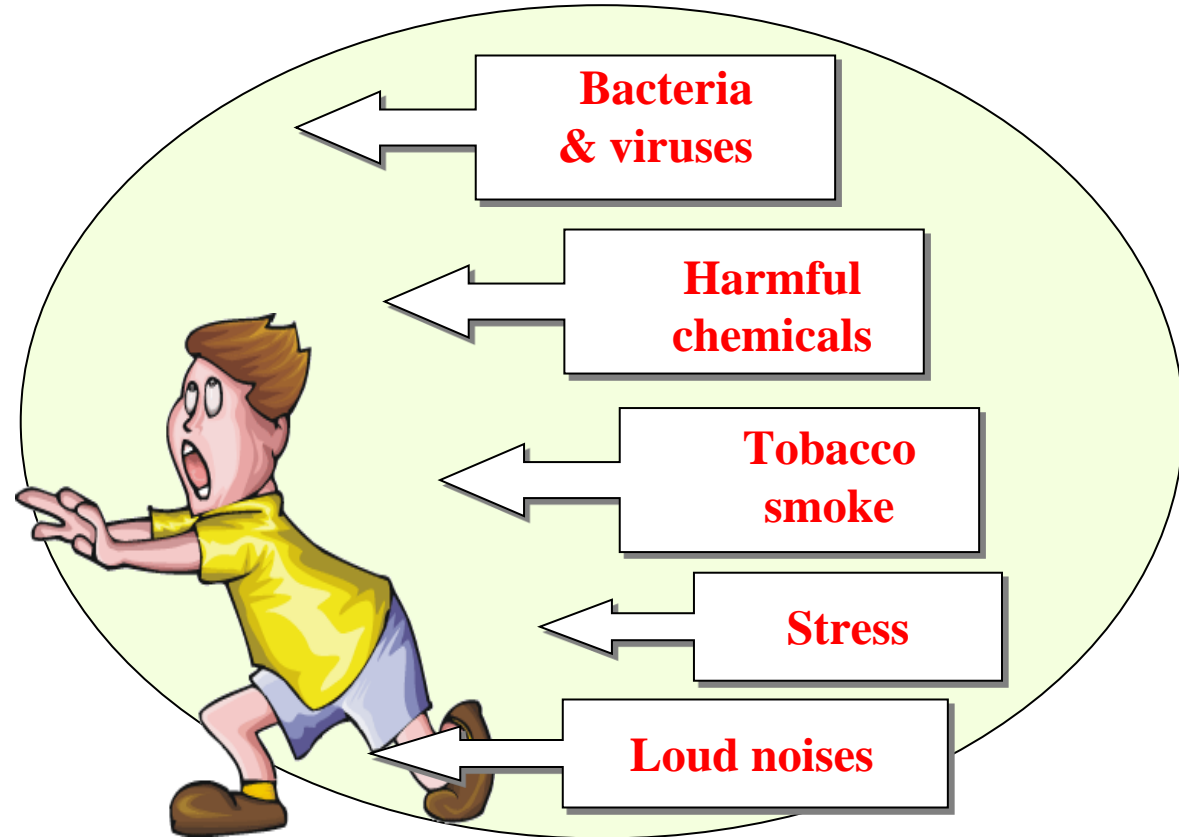
- Establishing social organizations.
- Formulating laws, principles and policies.
- Taking steps to safeguard his existence, interest and social welfare.



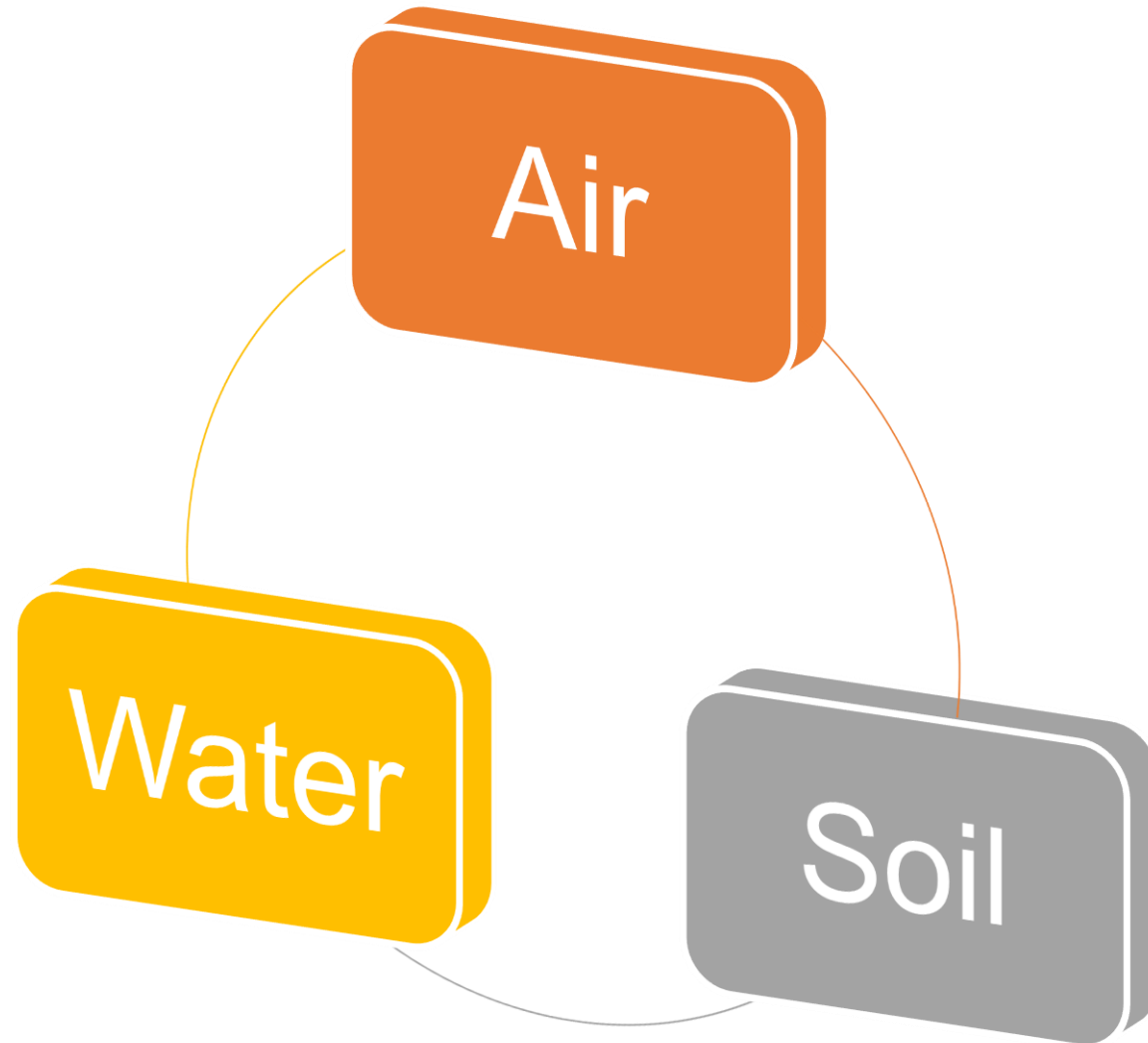
Environmental hazards

▶ **Hazard** is anything in the environment that can hurt you or make you sick.

1. **Biological hazard.**
2. **Chemical hazard.**
3. **Psychological hazard.**
4. **Social hazard.**
5. **Physical hazard.**

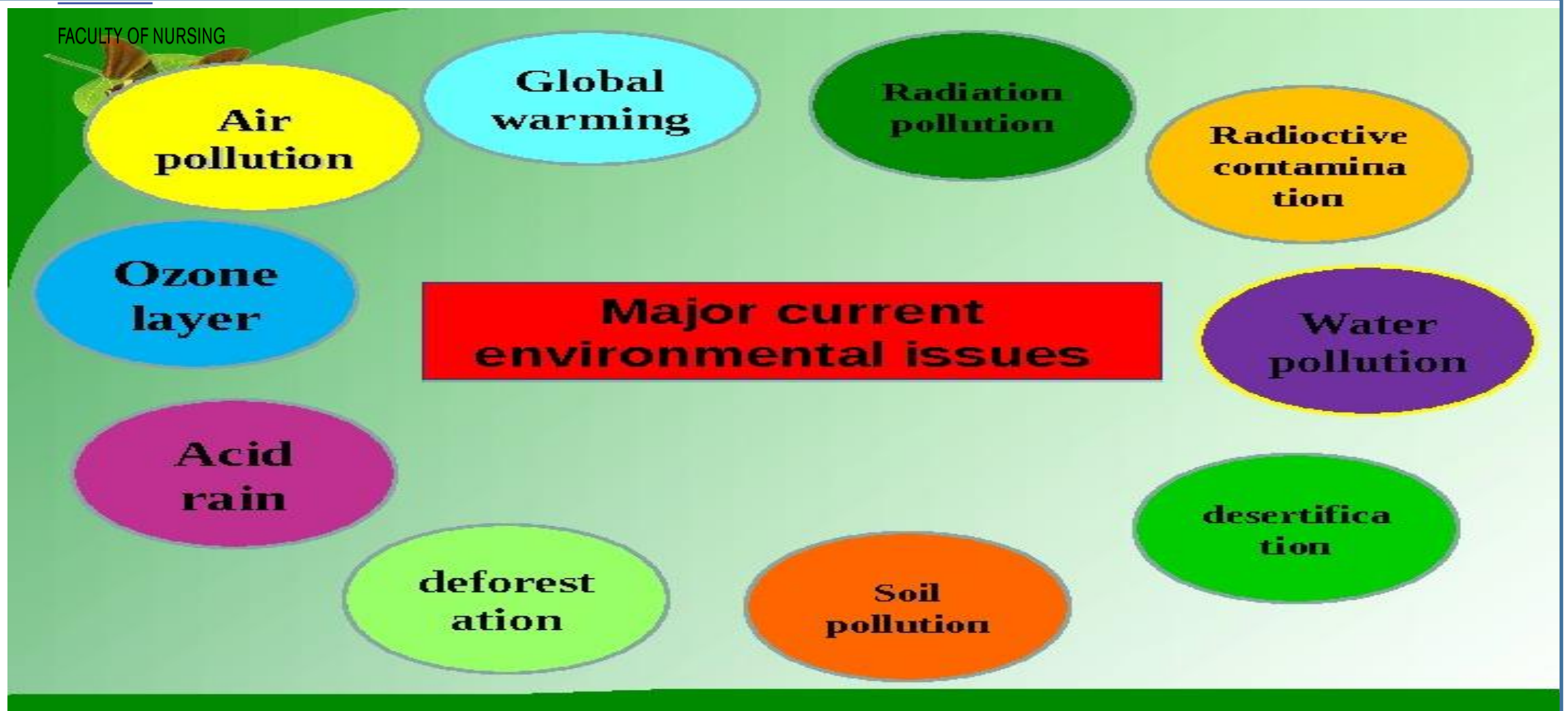


Support healthy environment “**Air, Water and food pollution basic component of human environment**”





Major Current Environmental Problems





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Water pollution

- **Water pollution** can be defined as presence of **solid, liquid or gaseous contaminants** in such **concentration** that may alter the **quality** of water.



Major Categories of Water Pollutants

Infectious Agents

Bacteria, Viruses, Protozoa, Parasitic Worms

Source: Human and animal waste

Inorganic Chemicals

Acids, Metals, Salts

Sources: household cleansers

Radioactive Materials

Iodine, radon, uranium, cesium, thorium

Source: Coal & Nuclear Power plants, mining.

▪ Plant Nutrients

- Nitrates, Phosphates,
- Source: Sewage

▪ Organic Chemicals

- Oil, Gasoline, Plastics, Pesticides
- Sources: Industrial effluent
- Household cleansers

▪ Heat/Thermal Pollution

- Source: Power plants



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Water Hazards and Health Effects

The main water-borne/fecal oral diseases are

- ☐ Giardia
- ☐ Typhoid fever
- ☐ Dysentery
- ☐ Cholera
- ☐ Diarrhea (caused by a variety of pathogens)
- ☐ Hepatitis
- ☐ Polio
- ☐ Worms





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Air pollution

- ❑ Addition of **harmful substances** to the **atmosphere** resulting in damage to the environment, human health and quality of life
- ❑ Can occur **indoor** or **outdoor**, in cities and across continents and even globally
- ❑ Air pollutants consist of: **gaseous pollutants, odors, suspended particle matter (dust, fumes, mist and smoke)**





Sources of Air Pollution



Natural Sources

- Volcanoes
- Earthquakes
- Forest fires
- Storms
- Floods
- Hurricanes

Man-made Sources

- Fuel combustion - Largest contributor
- Motor vehicles
- Power and heat generators
- Waste disposal sites



Indoor pollution



Cooking

Odors – particulates – Soot



Smoking

Carcinogens – Soot



Housekeeping

Particulates – Mold – Bacteria



Bathrooms

Odors – Mold – Bacteria



Air Fresheners

Pollen – VOC's – Soot



Pests

Allergens – Bacteria – Particulates



Pets

Allergens – Bacteria – Particulates

Outdoor Air Pollution

Some negative effects of outdoor air pollution include:

- acid rain
- ozone depletion
- global warming
- climate change



Climate Change

- A long-term change in the earth's climate, especially a change due to **an increase in the average atmospheric temperature**. It occurs due to rise in global warming which occurs due to increase in temperature of atmosphere by **burning of fossil fuels and release of harmful gases by industries**.

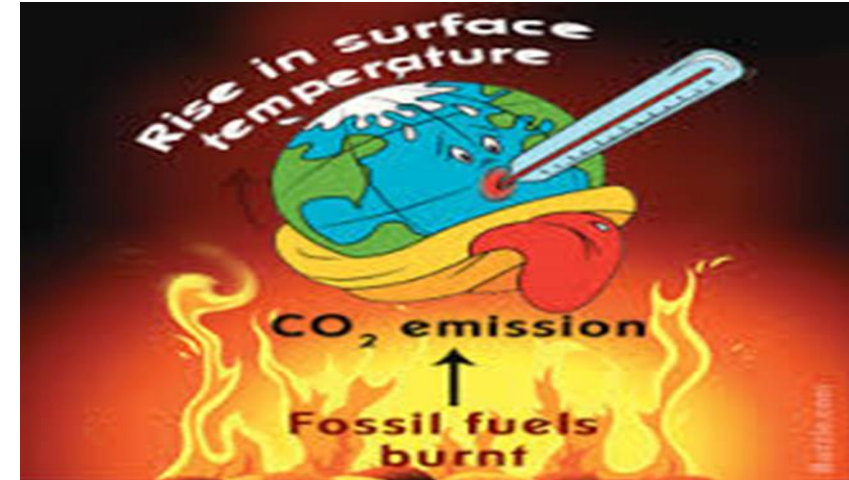
“Global warming is one aspect of climate change”.



Global warming

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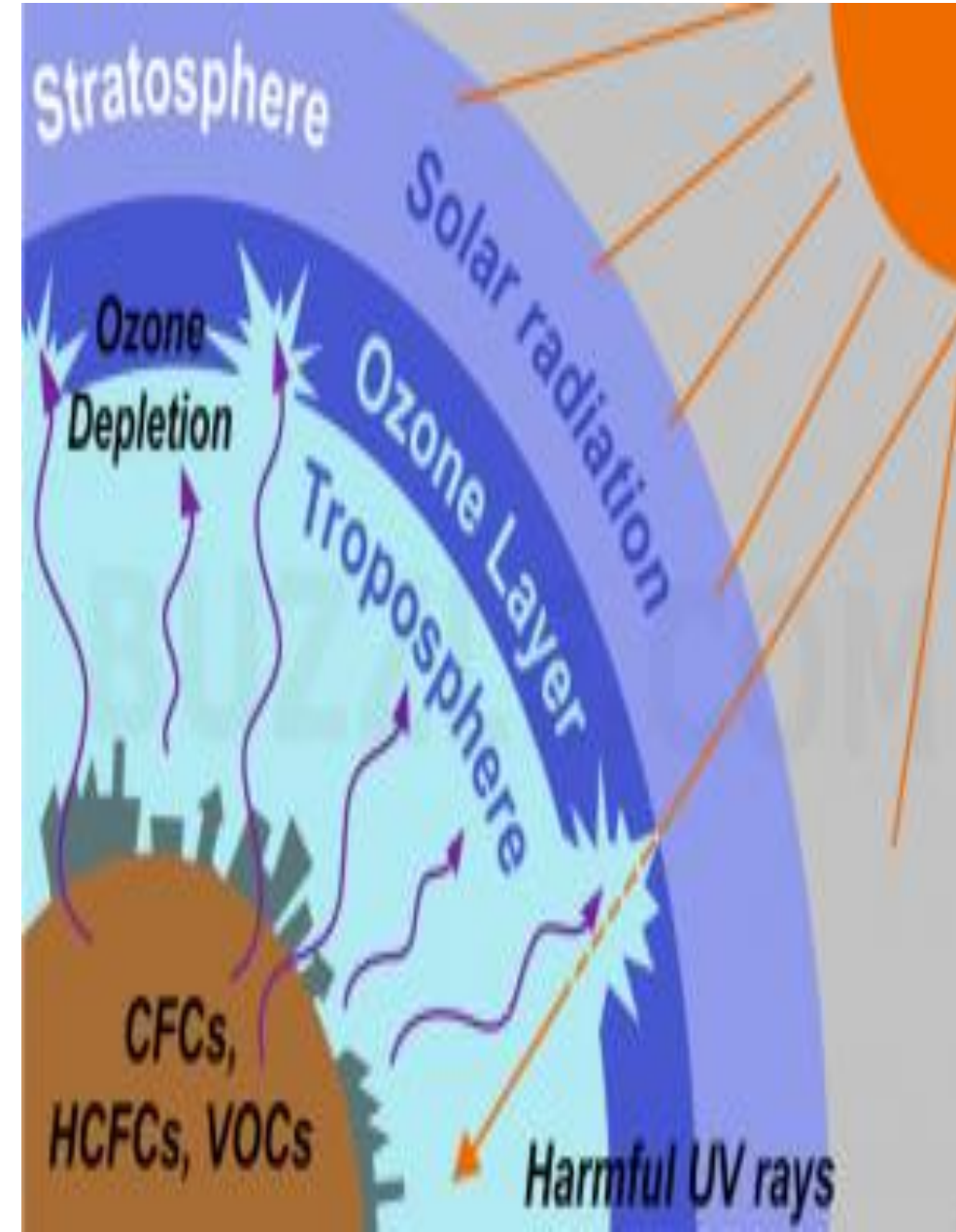
- **Global warming** refers to arise in temperature of the surface of the earth.
- Some things that people do are increasing the amounts of the greenhouse gases in the atmosphere, so more heat is trapped.
- The heating of the earth through human activities is called the '**Enhanced Greenhouse Effect**' and this is causing the earth to heat up, or **global warming**.
- Global warming doesn't just mean that the earth gets hotter, it means that the whole **climate is changing**.

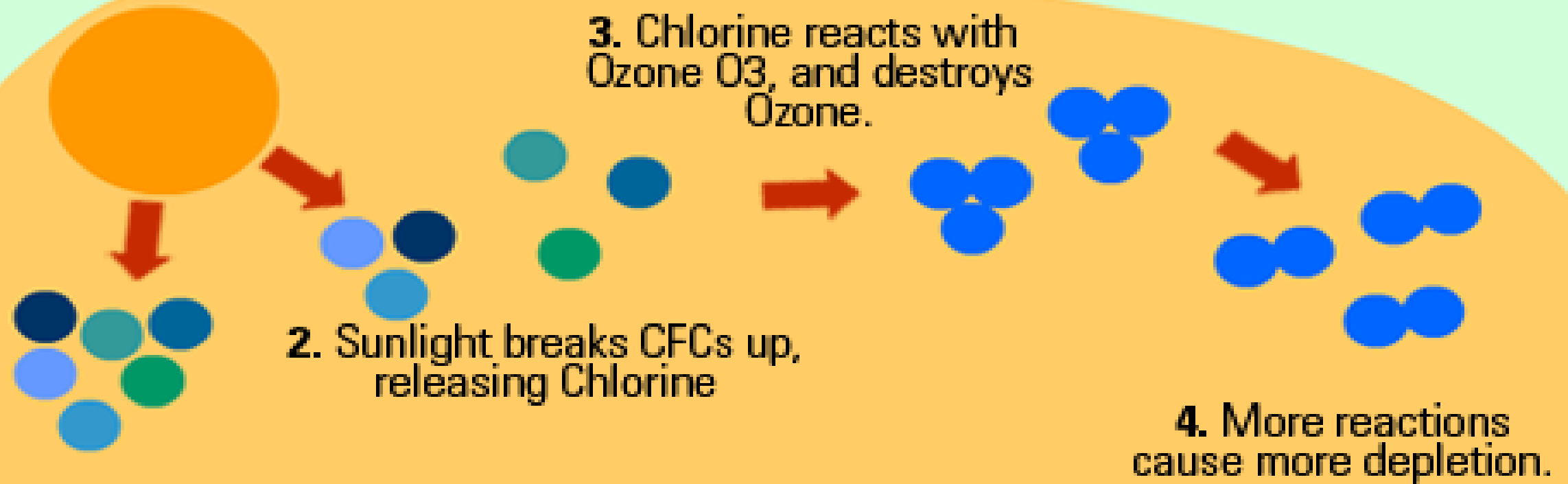




Ozone Depletion

- Nearly 90% of the Earth's ozone is in the stratosphere and is referred to as the ozone layer. ozone layer protects us from excessive exposure to ultraviolet radiation
- Chlorofluorocarbons (**CFCs**) has been widely used in refrigerators & air conditioners. These (cfcs) escape into the atmosphere & rise to the ozone layer, where they destroy the ozone molecules.



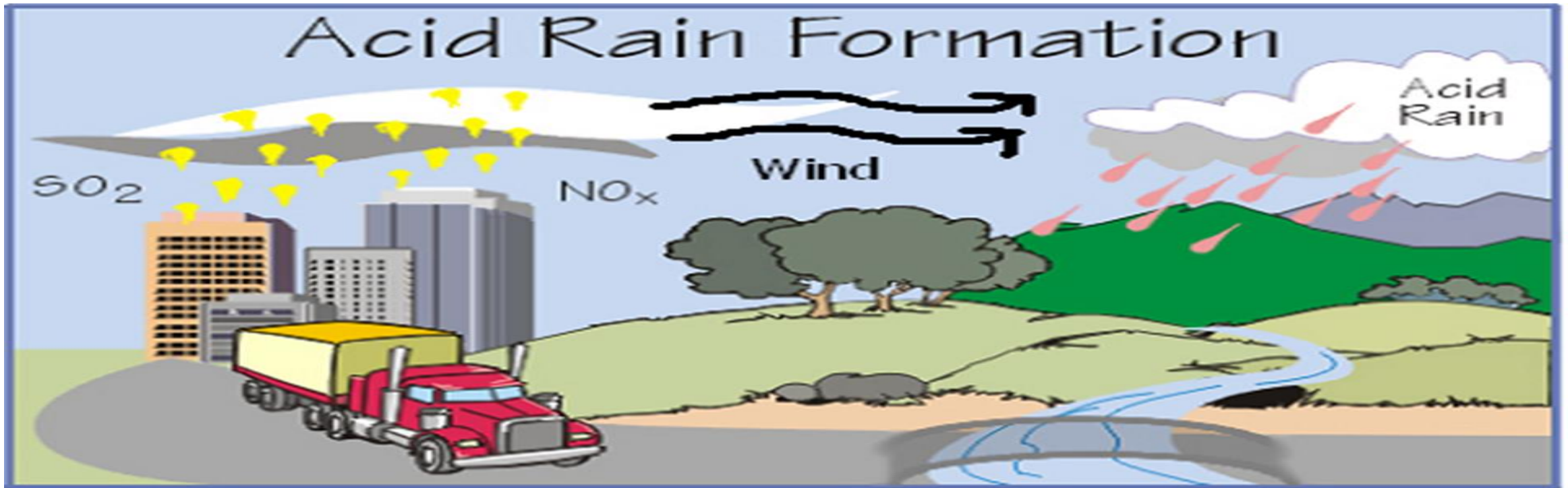


Hole in the Ozone Layer?





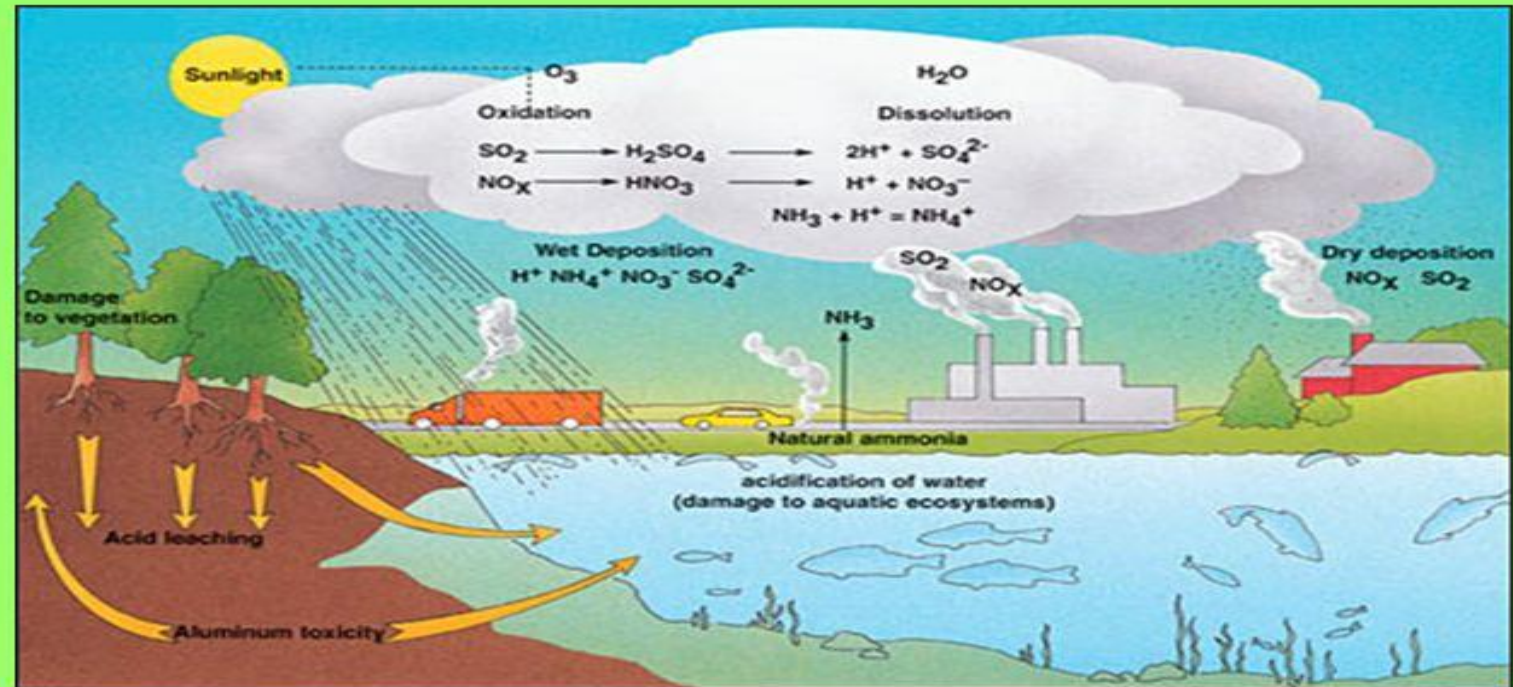
Acid Rain: It is formed when sulphur dioxides and nitrogen oxides, as gases or fine particles in the atmosphere, combine with water vapor & precipitate as sulphuric acid or nitric acid in rain.



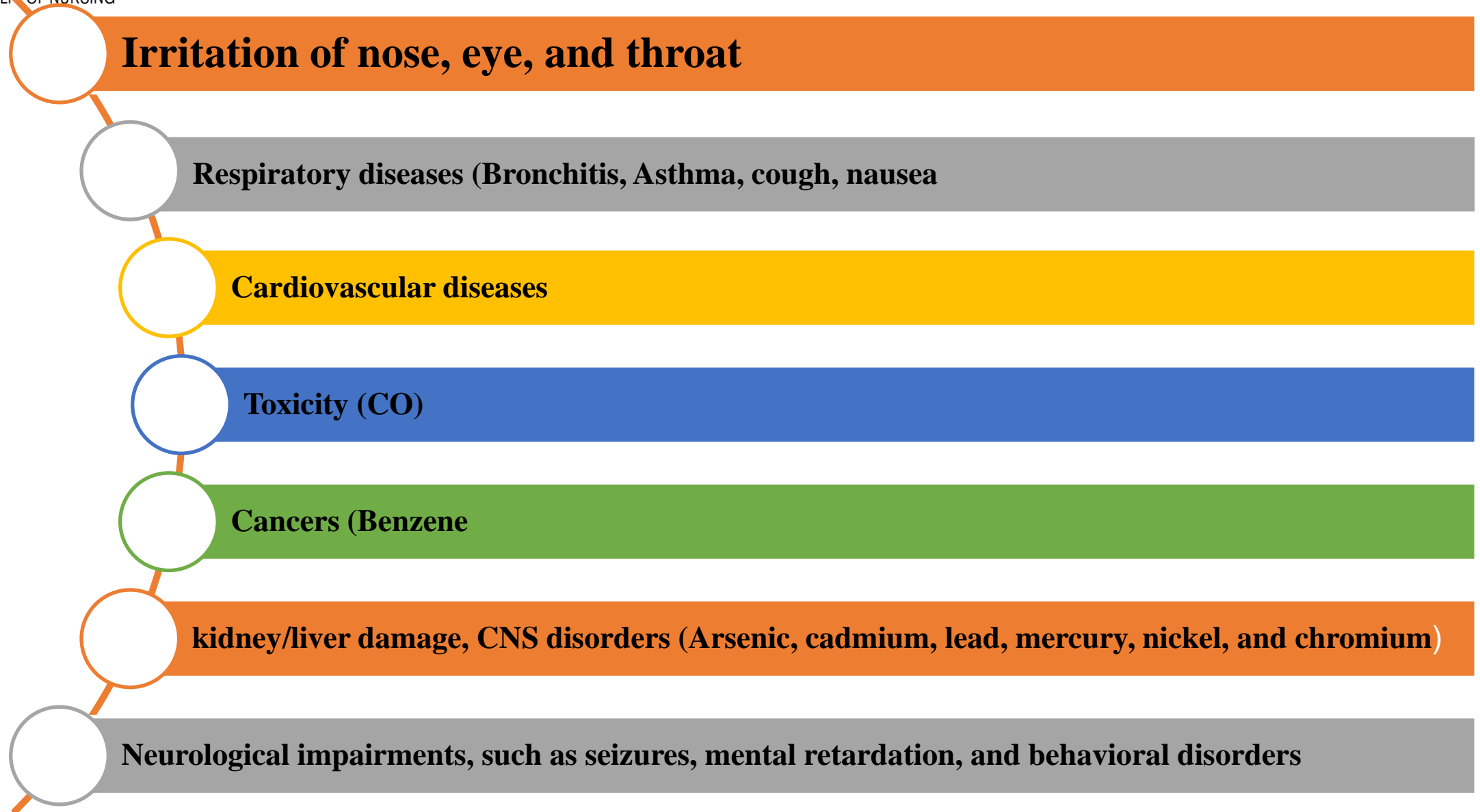
Why is Acid Rain Harmful?

- Acidic water dissolves the nutrients and helpful minerals in the soil and then washes them away before trees and other plants can use them to grow.

(phosphorus,
potassium,
calcium and
magnesium)



Health Effects of Air Pollutants





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Soil pollution

Soil pollution refers to **the contamination** of soil with **anomalous concentrations of toxic substances**. It is a serious environmental concern since it harbors many health hazards.





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Deforestation

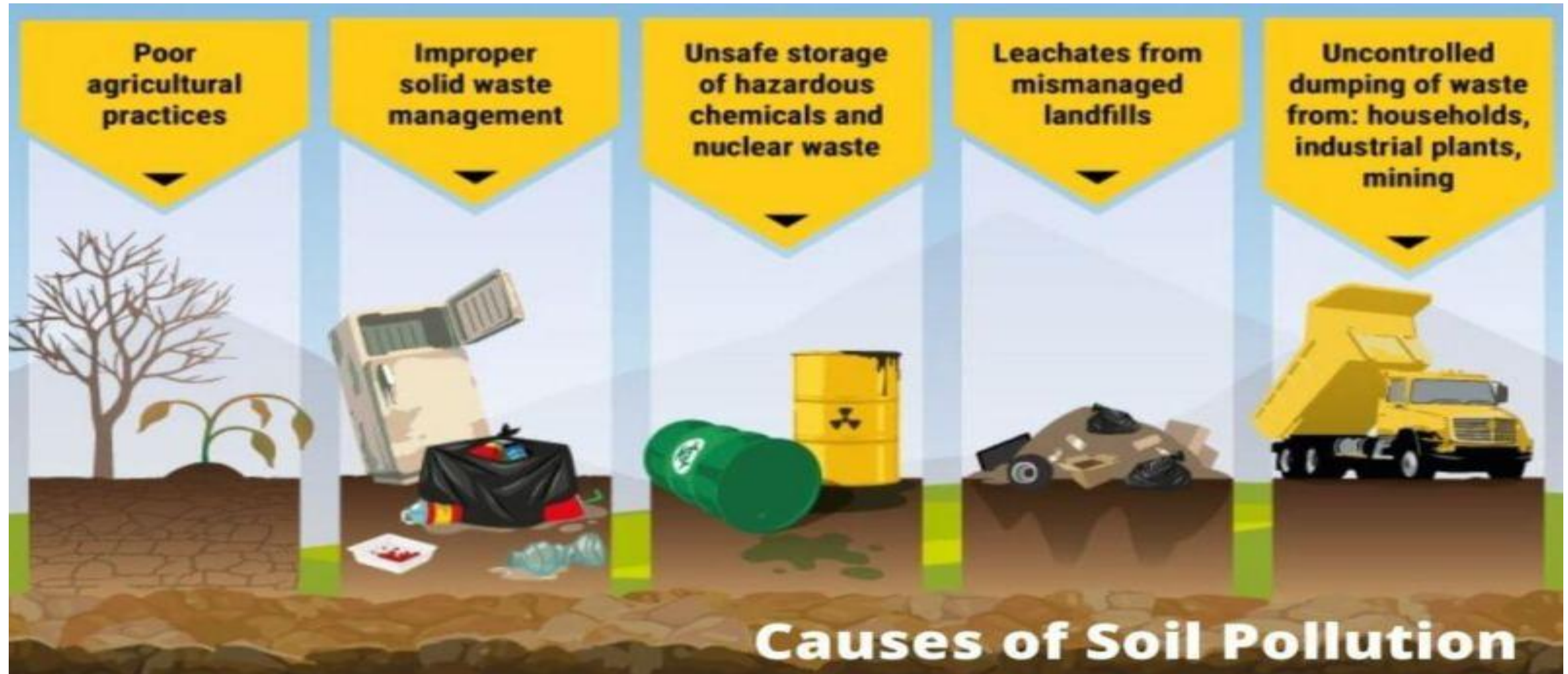
Deforestation simply means **clearing of green cover** and make that land available for residential, industrial or commercial purpose.





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Effects of Soil Pollution on plants

- Decrease in soil fertility and therefore decrease in the soil yield
- Loss of soil and natural nutrients present in it.
- Generally crops cannot grow and flourish in a polluted soil. Yet if some crops manage to grow, then those would be poisonous enough to cause serious health problems in people consuming them.

Effects of Soil Pollution on human beings

- Cancer
- Kidney and Liver Disease
- Brain and Nerve Damage
- Malaria
- Cholera and Dysentery
- Headaches, nausea, fatigue, eye irritation and skin rash

Back





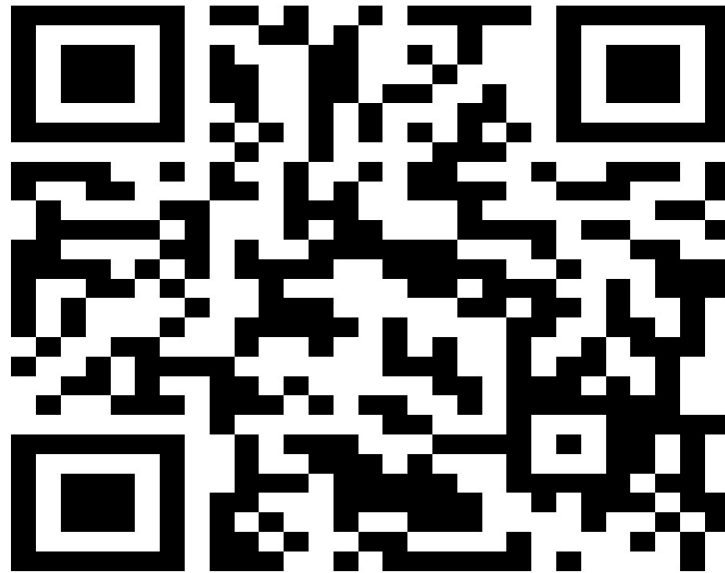
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- Main concept
- Core component of environmental health
- Environmental hazards
- the types of environment
- the current environmental problems.

- <https://forms.office.com/pages/responsepage.aspx?id=Bm7bl8QFnUixNsupSo5vNie1WrzD7EhEsS3pWckd831UNkxQQTI1TUZXQTIwQlZJUk9BMFIOTVJXSC4u>





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