



Pesticides

What is Pesticide???

- ■ ■ ■
 - A chemical used for the control of...
 - Insects
 - Plant Pathogens
 - Weeds

Definition of "pesticide" is any substance or mixture of substances intended for preventing, destroying, and controlling any pests

Types of Pesticides

- - Herbicides
 - Used to control unwanted plants or weeds.
- - Insecticides
 - Used to control insects.
- - Fungicides
 - Used to control fungal diseases.
- - Miticides
 - Used to control ticks & mites (Spider-like animals).

Types of Pesticides

- ■ ■ ■
 - Rodenticides
 - Used to control rodents (rats & mice).
 - Nematocides
 - Used to control hair-like worms that feed on plant roots.
 - Molluscicides
 - Used to control slugs & snails.




•Pesticide contaminates land and water when it

- Pesticide contaminates land and water when it
- escapes from production sites and storage tanks
- runs off from fields,
- discarded
- sprayed aerially
- Sprayed into water to kill algae.

A pesticide's half-life

- **A pesticide's half-life** (also known as pesticides degradation) is the time it takes for half of the initial amount of a pesticide to breakdown. If a pesticide's half-life is 30 days, then half will be degraded in 30 days, one quarter in 60 days, one-eighth after 90 days, etc



• **Persistent organic pollutants (POPs)** are compounds that resist degradation and thus remain in the environment for years. Some pesticides, including aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, etc., are considered POPs. The chemicals also have the ability to bioaccumulate and biomagnify, and can bioconcentrate

Classification

Pesticides can be classified by

1 - **Target organism**

Insecticides (kill insects)

Herbicides (kill weeds plants)

Rodenticides (kill rodents)

Fungicides (kill fungus)

Fumigants (kill whatever)

2. **Chemical structure as** inorganic, synthetic, or **biologicals** (biopesticides),

Some chemical families of pesticides

organochlorines, organophosphates, and carbamates.

- Organochlorine hydrocarbons (e.g. DDT), They operate by disrupting the sodium/potassium balance of the nerve fiber, forcing the nerve to transmit continuously.

- Their toxicities vary greatly, but they have been phased out because of their persistence and potential to bioaccumulate.

-



■ ■ ■ ■

-Organophosphate and carbamates largely replaced organochlorines.

Both operate through inhibiting the enzyme acetylcholinesterase, causing a variety of symptoms such as weakness or paralysis.

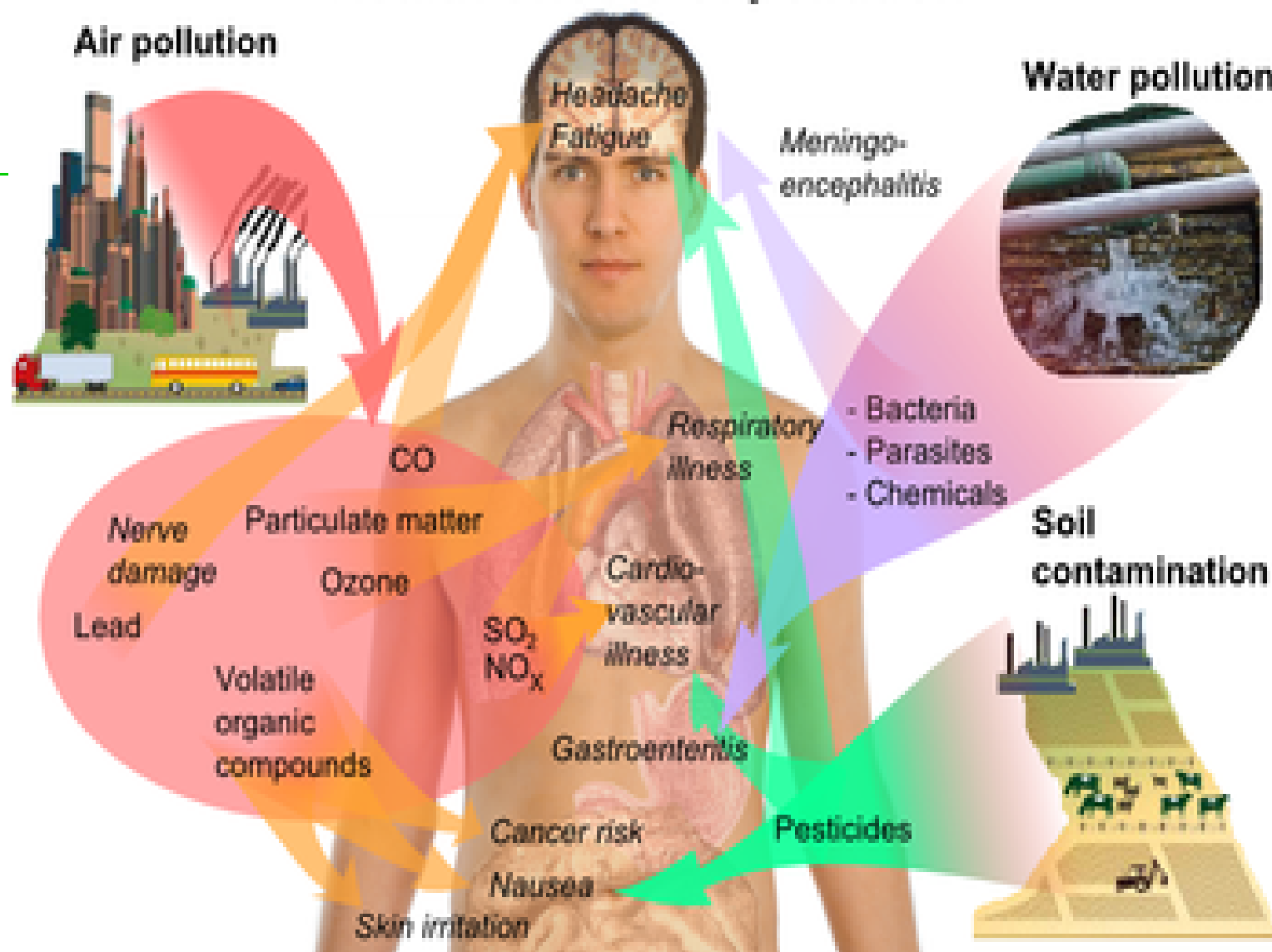
-**Organophosphates** are quite toxic to vertebrates, and have in some cases been replaced by less toxic carbamates.



•Environmental effects


- Pesticides are one of the causes of water pollution, and some pesticides are persistent organic pollutants and contribute to soil contamination.
- pesticide use reduces water and soil biodiversity,
- Some pesticides have been shown to interfere with legume-rhizobium chemical signaling, reduced nitrogen fixation and thus reduced crop yields.

Health effects of pollution



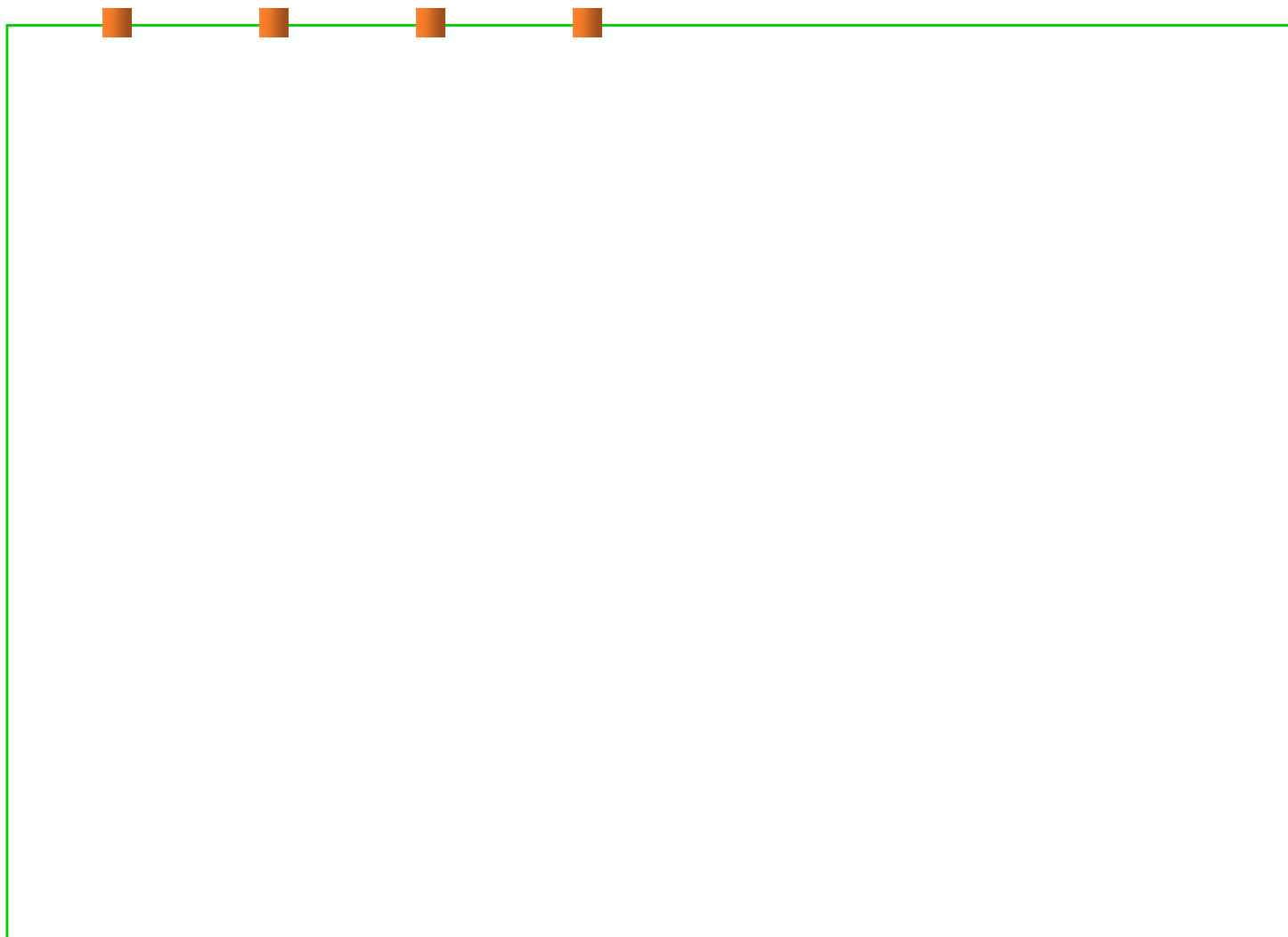


Pesticides are implicated in a range of impacts on human health due to pollution



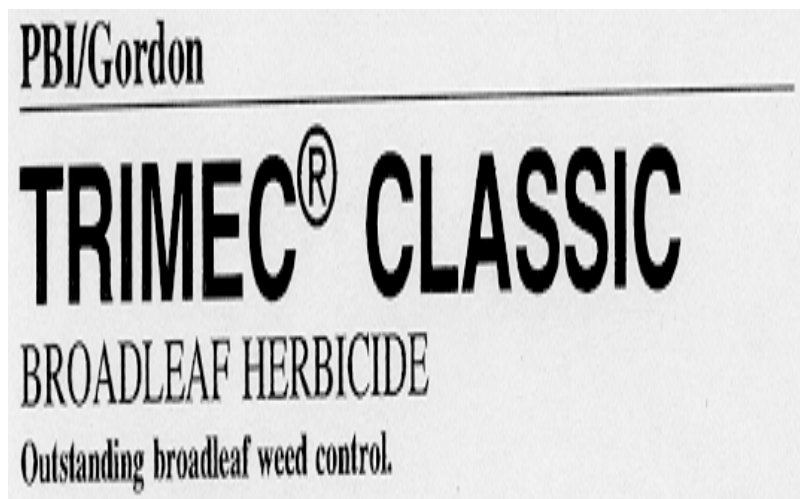
Pesticides can enter the human body through inhalation of aerosols, dust and vapor that contain pesticides; through oral exposure by consuming food and water; and through dermal exposure by direct contact of pesticides with skin

- Pesticides are sprayed onto food, especially fruits and vegetables, they secrete into soils and groundwater which can end up in drinking water and pesticide spray can drift and pollute the air.



Pesticide Safety

- Check the recommended uses to be certain it is correct for intended use.
- Have clean water and detergents available to wash spills.





- Children are most susceptible and sensitive to pesticides due to their small size and underdevelopment. The chemicals can bioaccumulate in the body over time
- Exposure to pesticides can range from mild skin irritation to birth defects, tumors, genetic changes, blood and nerve disorders, endocrine disruption, and even coma or death.

Pesticide Safety

- Wear protective clothing called for on label including rubber chemical gloves or respirator.



Pesticide Safety

- Use extra caution with concentrated chemicals when mixing.
- Mix just enough for the job at hand.
- Always wear protective gloves or goggles.



Pesticide Safety

- Apply the chemical with care.
- Use only amount needed on the target area.
- Consider weather conditions.



Pesticide Safety

- ■ ■ ■
 - Guard against inhalation or ingestion
 - Toxicity can occur by contact with:
 - skin (dermal)
 - eyes (ocular)
 - mouth (oral)
 - breathing
 - Store and dispose of chemicals properly