



Environmental effects of Herbicides & pesticides

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What is environment.....

- **Environment** is living things and what is around you. It includes physical, chemical and other natural forces.



Natural Environmant



Built Environmant

What the mean of herbicide & pesticide.....

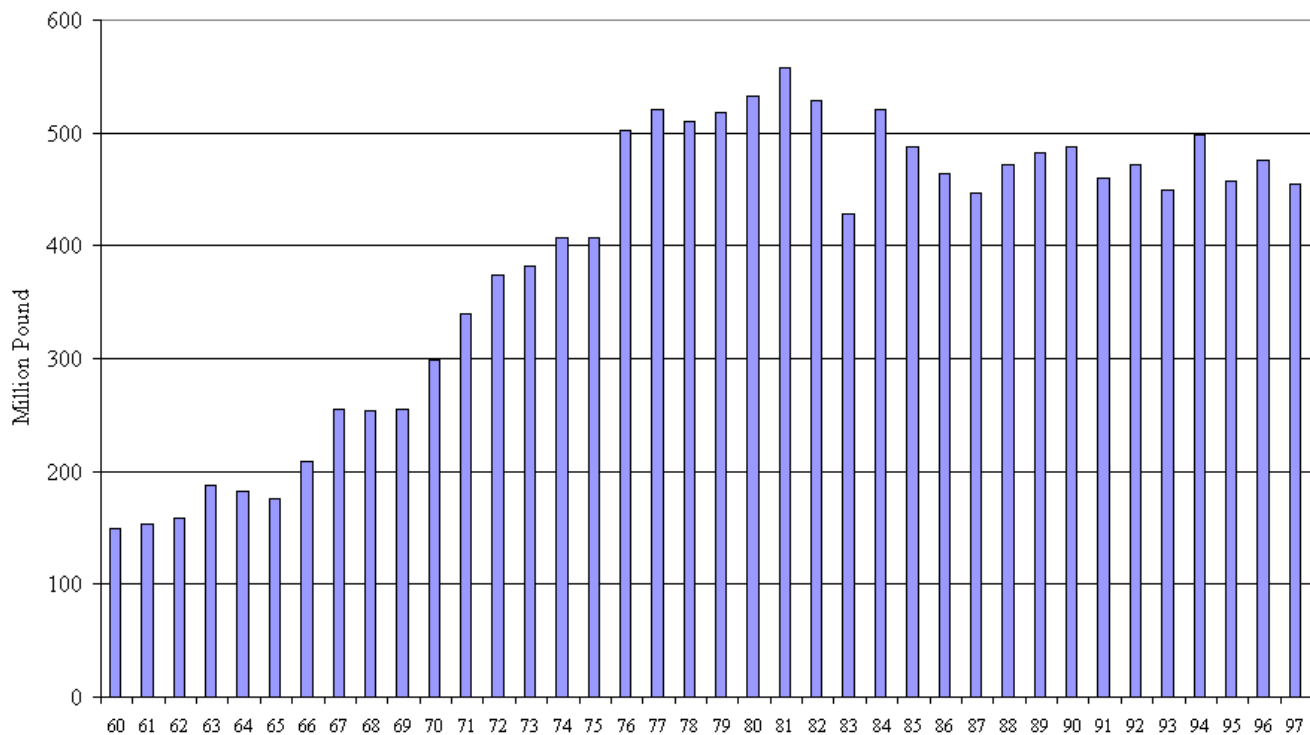
- Simply can say chemical substances use to control weeds & pests



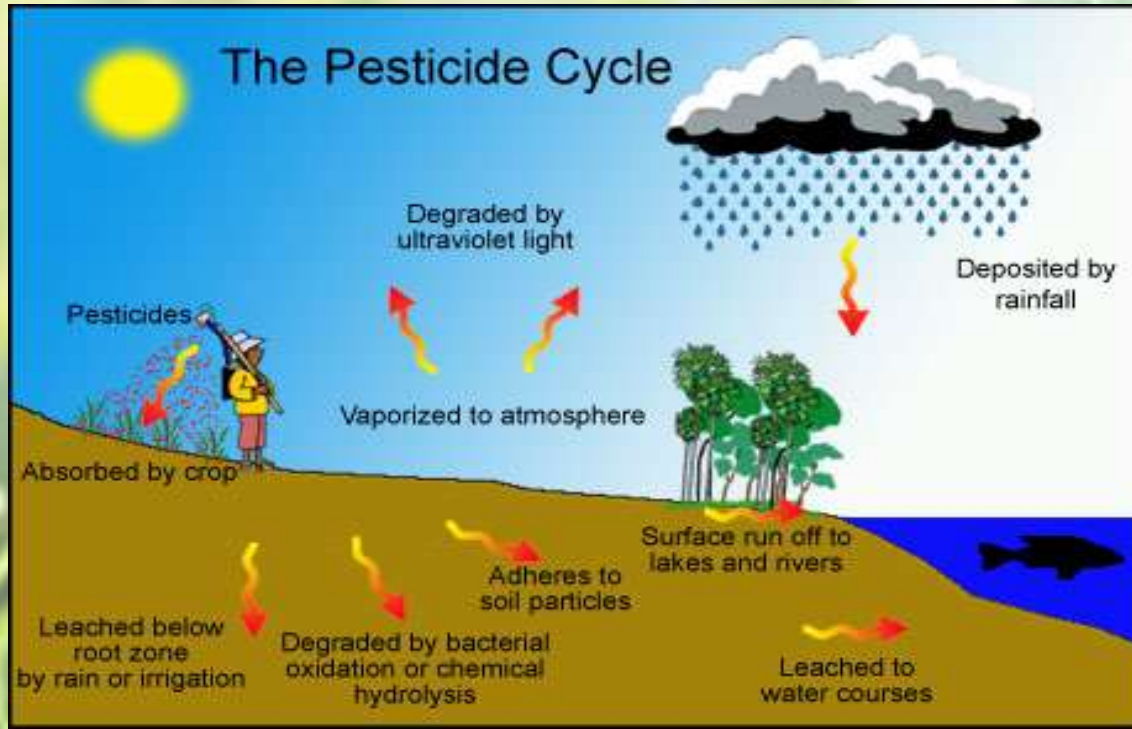
Evaluation of herbicide

- 10,000 B.C.— removing weeds by hand
- 6,000 B.C.— the use of primitive hand tools to till the land and destroy weeds
- 1,000 B.C.— animal-powered implements like harrows
- 1920 A.D.— mechanically-powered implements like cultivators, blades, harrows
- 1930 A.D.— biological control
- 1947 A.D.— chemical control Start the environmental impacts

Figure 1. Trend in Quantity of Pesticides Applied to 12 Crops--Corn, Soybeans, Cotton, Wheat, Sorghum, Potatoes, Barely, Rice, Tobacco, Sugarbeets, Peanuts, and Oats



What happen to chemicals in the enviroment after application



- It have ability to contaminate every part of the enviroment.
- From that make lot of Effects to the enviroment

Air pollution by pesticide

- Pesticides can be volatilized and may be blown by winds into nearby areas.
- Following factors affect the spreading of pesticide in the air
 - Weather conditions at the time of application
 - Temperature
 - relative humidity
- Ground spraying produces less spread than aerial spraying.



- To minimize this air pollution farmers can establish a buffer zone around their crop fields.
- plants such as evergreen trees to serve as windbreaks and absorb the pesticides.
- It prevent drift in to other areas.
- Such windbreaks are legally required in the Netherlands.



Water pollution by pesticide

- There are four major routes through which pesticides reach the water.
 - Contaminate water when they spraying. Ex. Rice cultivation
 - it may percolate, or leach, through the soil.
 - it may be carried to the water as runoff.
 - carried to water by eroding soil.
- After contaminate the water it makes lot of problems
 - Application of herbicides to bodies of water can cause fish kills.
 - Reduce the quality of drinking water.
 - Reduce the amount of water available for cultivation.
 - Altering the physical characteristics of water bodies.
- Insecticides are typically more toxic to aquatic life than herbicides and fungicides.

Soil pollution by pesticide

- The use of pesticides decreases the general biodiversity in the soil.
- Also affect to the soil micro-organisms & decrease the soil fertility.
- Effect on growth of the plants.
- Residual effect of the pesticide in the soil.
- Enter to the food chain & bio magnification.



Pesticide effect on plants

- Root nodule formation in plants saves the world economy \$10 billion in synthetic nitrogen fertilizer every year.
- specially **pentachlorophenol** interfere with legume-rhizobium chemical. Reduction of this symbiotic chemical results in reduced nitrogen fixation.
- Pesticides can kill bees and decline the pollinators.
- US farmers lose at least \$200 million a year from reduced crop pollination because pesticides applied to fields.

Pesticide effect on animals

- Pesticides can eliminate some animals' essential food sources.
- Residues can travel up the food chain.
- Earthworms digest organic matter and increase nutrient content in the top layer of soil. Pesticides have harmful effects on growth and reproduction on earthworms.
- Pesticide exposure can be linked to cancer, endocrine disruption, reproductive effects, neurotoxicity, kidney and liver damage, birth defects and developmental changes in a wide range of species

❖ Birds

- The US estimates that 72 million birds are killed by pesticides in the United States each year.
- DDT-induced egg shell thinning has especially affected European and North American bird populations.
- some types of fungicides slightly toxic to birds and mammals, but may kill earthworms, which can in turn reduce populations of the birds.
- The paraquat, when sprayed onto bird eggs, causes growth abnormalities in embryos and reduces the number of chicks that hatch successfully

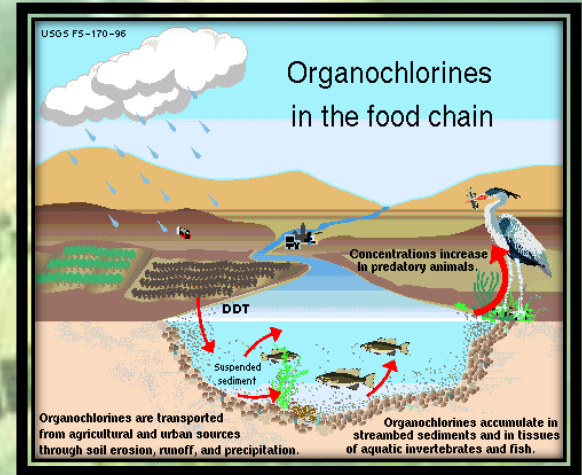
Specific pesticide effects

❑ Organochlorine DDT/DDE

- Egg shell thinning in birds.
- Endocrine disruptor
- Acute mortality attributed to inhibition of acetylcholine esterase activity

❑ Organophosphate

- Thyroid disruption properties in rodents, birds, amphibians and fish
- Acute mortality attributed to inhibition of acetylcholine esterase activity
- Reduce metabolic functions such as thermoregulation



❑ Carbamate

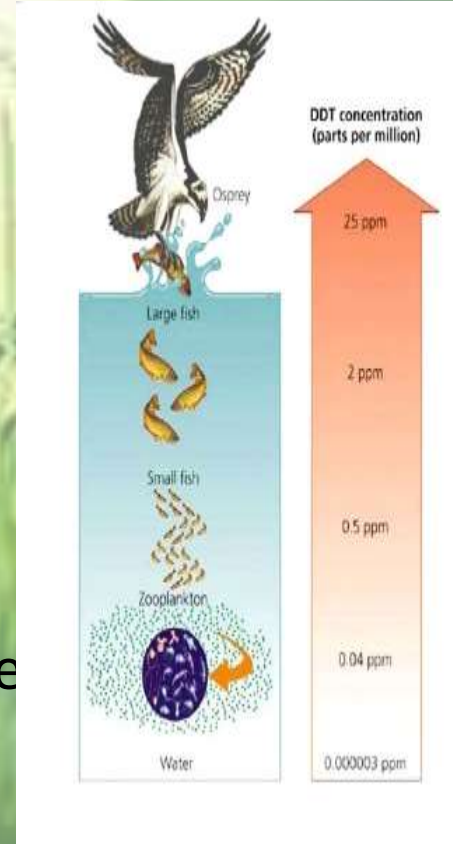
- Interact with vertebrate immune systems
- Reduce metabolic functions such as thermoregulation
- Acute mortality attributed to inhibition of acetylcholine esterase activity

❑ Parathyroid

- Toxic to beneficial insects such as bees and dragonflies.
- Toxic to fish and other aquatic organisms.

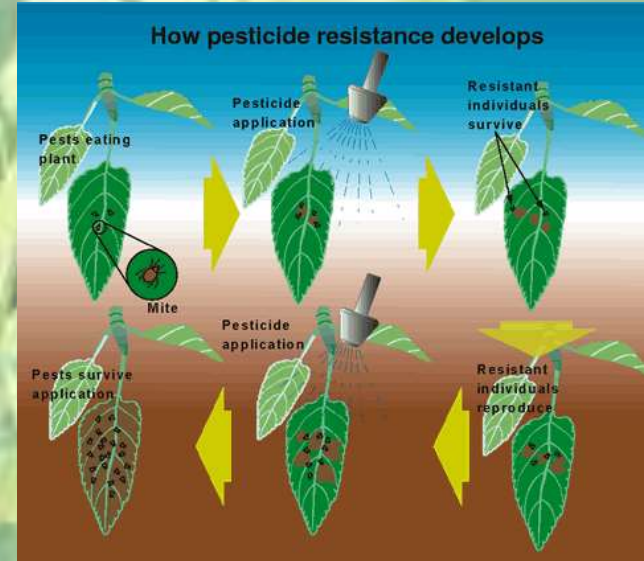
Biomagnifications

- If any individual continuously eat contaminated food it will accumulate in the body.
- All individuals are part of food chain as a result, toxins stored in the fats & oils pass one trophic level to next trophic level.
- The higher up the food chain more concentrate the pesticide called biomagnifications.
- This is danger expose to human because they are also in top of the food chains.



Resistance development

- When pesticide use long period of time, some pest become resistance to the pesticide.
- Because of resistance development pest can not be control.
- Famer have to increase the concentration or change the pesticide it make more & more environmental effects



*Thank
you*

