**BioAccumulation**
**Science 10 Notes**

## Bioaccumulation


- The accumulation of chemicals in organisms
- Chemicals enter your body in 3 ways:
  1. ingest (eating)
  2. inhaling
  3. touch / absorbed.
- Some chemicals we are able to metabolise / break down
- Many harmful chemicals cannot be broken down and are not effectively removed from your body.

## Biomagnification

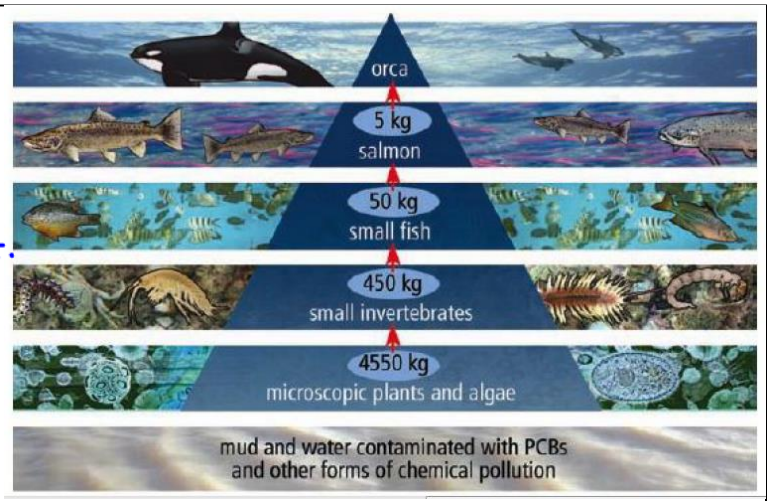
- At each trophic level, harmful chemicals can get stored, and as the organisms are eaten by the next trophic level, those chemicals are transfered on to the next level.
- The higher up an organisms is on the food pyramid, the more harmful chemicals can accumulate.

## *Keystone species

- Organisms that are essential to an ecosystem.
- They may be predators that control populations of prey
- They may be low on the food pyramid and provide energy to the rest of the food chain
- If biomagnification occurs in a keystone species, it can affect every other organism in the food web!

## Case Study: Orca's and PCBs

polychloryl biphenyl
- produced as part of industrial waste.
- 1977 they were banned because of potential environmental impact.




Orca's absorb PCB's over time and store them in their blubber where they are not harmful. During times of famine, the blubber is broken down for energy, and the PCB's are released.

**Persistent Organic Pollutants** (POP's)

- POP's contain carbon and can remain in the soil and water for a long time
- Many POP's are insecticides (pesticides) used to control pest populations in agriculture.
- They can accumulate in farm soil, and then leech into the water supply

DDT is a pesticide that kills mosquitos

**Heavy Metals** some of the chemicals that accumulate

- All are found naturally, but the background levels have been steadily increasing.

**Lead**:

- Causes anemia, nerve damage and damage to the reproductive system
- Found in many electronics.

**Cadmium**:

- Causes lung cancer and damage to the nervous and immune systems
- Found in cigarettes, plastics and batteries

**Mercury**:

- Accumulates in the brains and kidneys
- Causes birth defects.
- Released from the earth during mining and from burning of fossil fuels/coal.

**Reducing the Effects of Chemical Pollution**

reducing use/production of pesticides
reducing use
disposing properly.
make manufacturers control their pollution
- catch it before it gets out.

Bioremediation*
- a way to clean oil spills.
- make bacteria that can break down organic chemicals.

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