

Pesticide (DDT) Accumulation in Food Chains

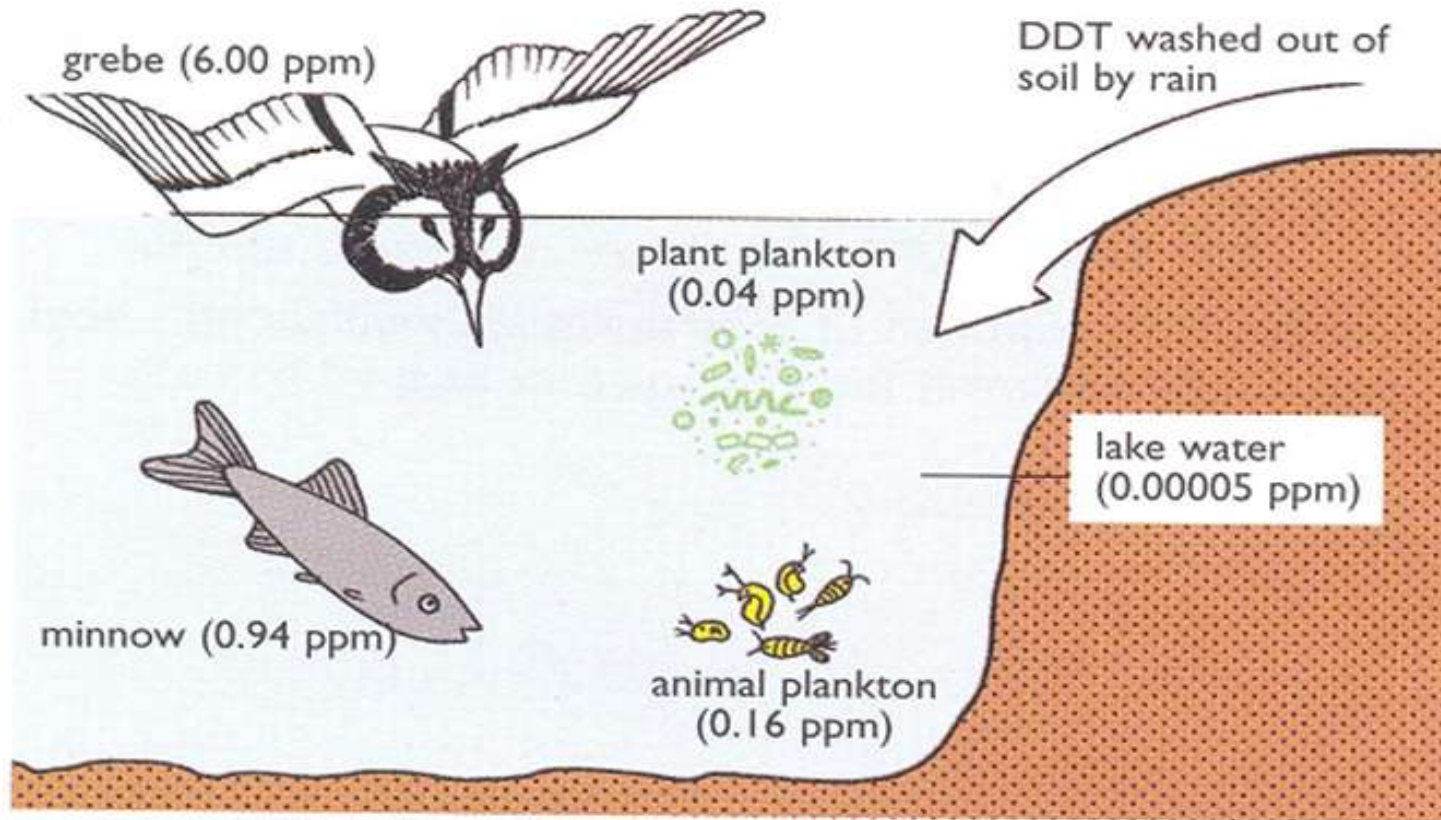
Learning Outcomes -

- To describe the effects pesticides have on organisms in food chains
- To describe how their toxicity changes

Pesticides DDT

- DDT is a poisonous chemical sprayed onto crops to kill insect pests.
- The molecules of DDT are non-biodegradable (i.e. are not broken down by decay microbes into harmless substances). They, therefore, gather in the soil and are washed away by rain into lakes near farmland.
- But what effect does DDT have on the aquatic life?
- Is it only aquatic life that is affected?

DDT Accumulation - Food Web



Plant Plankton → Animal Plankton → Minnow → Grebe

Exercise Answers

1. Plant Plankton → Animal Plankton → Minnow → Grebe

2.

Organism	DDT concentration (ppm)
Plant plankton	0.04
Animal plankton	0.16
Minnow	0.94
Grebe	6.00

3(a) The further along the food chain you progress, the greater the concentration of DDT.

Exercise Answers

(b) The grebe - as the concentration was always the greatest in them. As they ate more fish this DDT concentration kept increasing.

4. As it was non-biodegradable, its concentration increased as it moved through the food chain. Inevitably, it poisoned a lot of animals and even became part of our own food chain.

5. DDT, being non-biodegradable, was constantly increasing in concentration in organisms in a food web. Its accumulation reached poisonous levels in organisms near the apex in the pyramid of numbers.

Exercise Answers (6)

- a) Plant plankton contains much lower levels of DDT. The moorhen (plant eater) accumulates much less DDT as a result of this.

- b) The gannet feeds in a different part of the environment (seawater) to the grebe (freshwater). DDT not being washed into water sources as much at sea and so accumulates in far lower amounts.

Success Criteria: I can

- Construct a food chain
- State the relationship between the organisms in a food chain and the concentration of DDT
- Explain the relationship between organisms in a food chain and the concentration of DDT