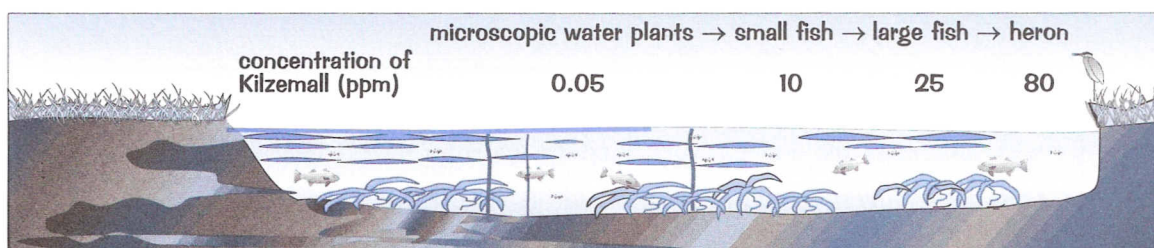


Problems Caused by Pesticides

Q1 Answer these questions about pesticides:

- a) What is a **pesticide**? Why are pesticides useful to **farmers**?
- b) In a study of an aquatic food chain in a small pond, it was found that many of the animals contained a fat-soluble pesticide called Kilzemall. The results are shown below.
Describe and **explain** the trend in the concentration of Kilzemall as it moves along the food chain.



- c) Kilzemall was designed to kill insects in wheat fields, not insects in water.
Suggest how the pesticide got into the pond.
- d) Modern pesticides are tested in many ways to ensure their safety.
Explain **why** we should be concerned about the health of organisms exposed to pesticides.

Q2 In 1939 a pesticide called **DDT** was discovered. During the following decades it was widely used. However, DDT is now **banned** in many countries because of the problems it caused. Here is an example of a food chain from a lake where DDT was present.

plankton → fish → grebes

The **lake water** contained 0.03 p.p.m. (parts per million) of DDT.
The **grebes** contained 1800 p.p.m. of DDT.

- a) How many times more concentrated had the DDT become by the end of the food chain?
- b) **Explain** why the concentration of DDT increased along the food chain.
- c) What **effects** might this concentration of DDT have had on the grebes?

Problems Caused by Fertilizers

Q1 **Artificial fertilizers** are one of the things that have allowed modern farming to keep up with the growth in population.

Explain how the use of artificial fertilizers has helped to **increase** food production.

Q2 The sentences below are steps in the eutrophication of a lake, but they are mixed up.

a) Write out the sentences in the **correct** order.

- Fish and other aquatic animals die of suffocation.
- The microbes take more oxygen from the water for their respiration.
- Excess fertilizers leach from the soil and are washed into the lake.
- The number of microbes that feed on dead organisms increases.
- There is increased competition between the plants, and some die as a result.
- Water plants in the lake start to grow rapidly.

b) What causes the water plants to grow more quickly?

c) What **resources** are the water plants competing for? **Which** resource is probably in excess?

d) If there are more plants in the lake, you might expect more oxygen to be produced by photosynthesis. Why does the oxygen content of the water **go down** instead?

Normally, the action of decomposers such as bacteria is positive, because it allows scarce nutrients to be recycled for use by other organisms in the community — as in the nitrogen cycle.

e) Why is the action of **decomposers** such a problem in the case of a eutrophic lake?

f) **Describe** some environmental consequences of eutrophication.

g) Suggest **two** courses of action that might be taken, to rescue a lake which is becoming eutrophic.

Eutrophication — "mega-growth", "mega-death" and "mega-decay"...

These pages are about two things — pesticides and fertilizers. You need to understand how each damages the environment. Don't mix them up — they cause harm in different ways.