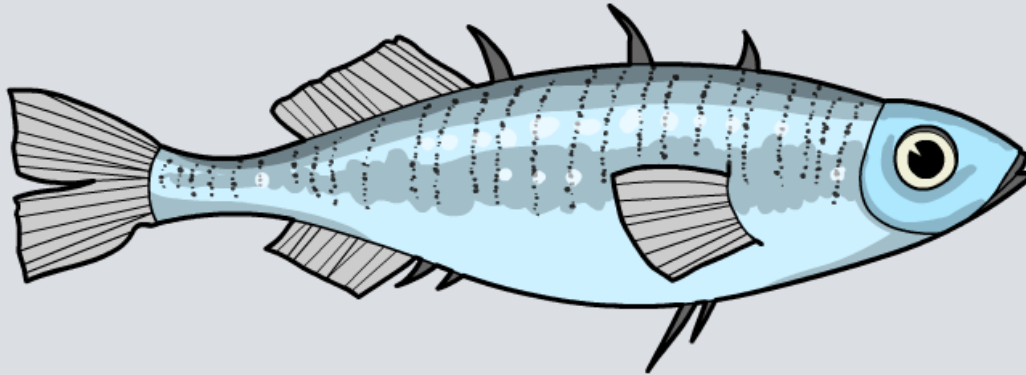


## Water Pollution



# What causes water pollution?

Rivers and oceans are often used to dispose of waste. This can cause extensive damage to aquatic life.

Substances dumped at sea include sewage, oil, industrial chemicals, fuels, plastics, and disused ships.



Substances used on land, such as pesticides and fertilizers, can be washed into rivers and oceans, causing damage to ecosystems.



## What is eutrophication?

Pollution containing high concentrations of nutrients, such as sewage or fertilizer, can cause **eutrophication**. This can have very damaging effects on the aquatic ecosystem.

Click "**start**" to learn more about eutrophication.



start



## What is the order of stages in eutrophication?

- 1 Aerobic animals are unable to respire
- 2 Algae grows rapidly due to an increase in nutrients
- 3 The algal bloom reduces the amount of light
- 4 Bacteria decompose the dead plants
- 5 Bacteria deoxygenate the water
- 6 Plants in the lake die
- 7 Sewage or fertilizer enters the lake or river



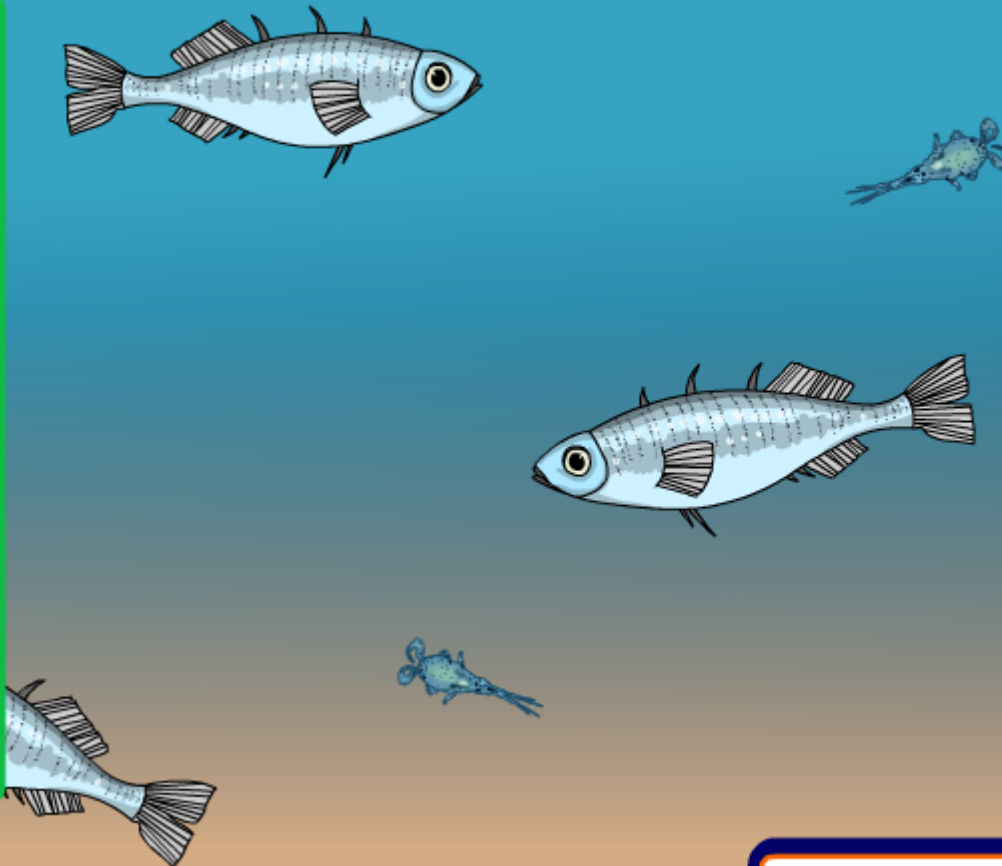
solve



## How do pollutants accumulate in the food chain?

As a pollutant passes along the food chain it becomes more concentrated at each stage. This is called **biomagnification**.

Click "**start**" to find out how it happens.



start



Some pollutants can build up in food chains, causing harm to aquatic organisms. These chemicals tend to be very stable compounds that are not easily broken down in the natural environment.



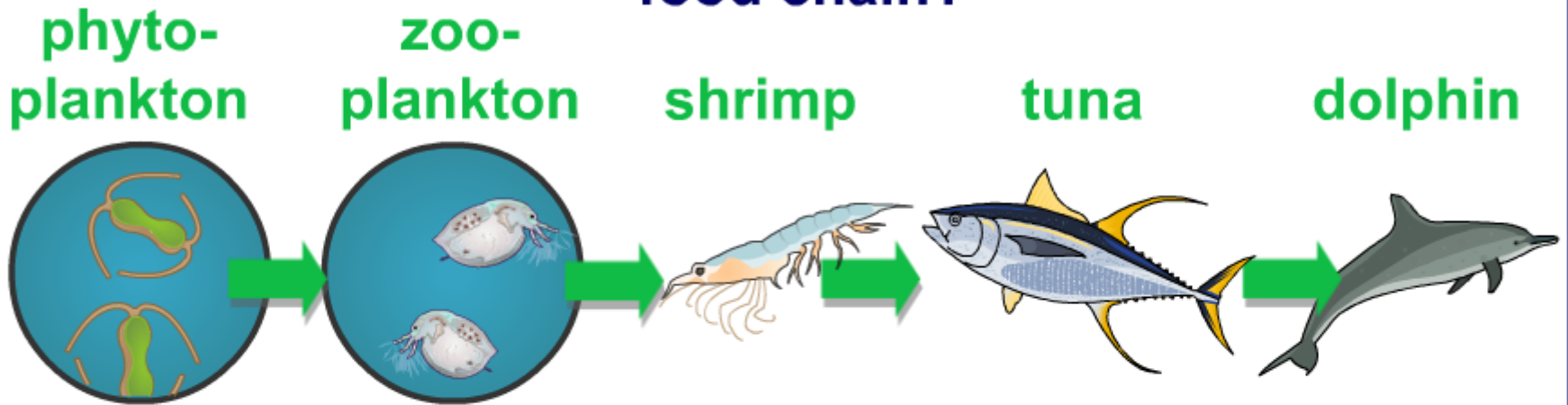
- **PCBs** are chemicals used in coolants and insulating fluids in electrical equipment. Their use was banned in 1978.
- **DDT** is a chemical that was widely used as an insecticide, helping to control populations of disease carrying insects. It was banned in 1972.

It is thought that these chemicals can cause a variety of problems in higher animals, affecting the immune system, growth and reproduction.



# Which concentration?

How does the concentration of PCBs change in a food chain?



? ? ? ? ?

0 ppm

30 ppm

4 ppm

0.4 ppm

0.009 ppm

0.06 ppm

?

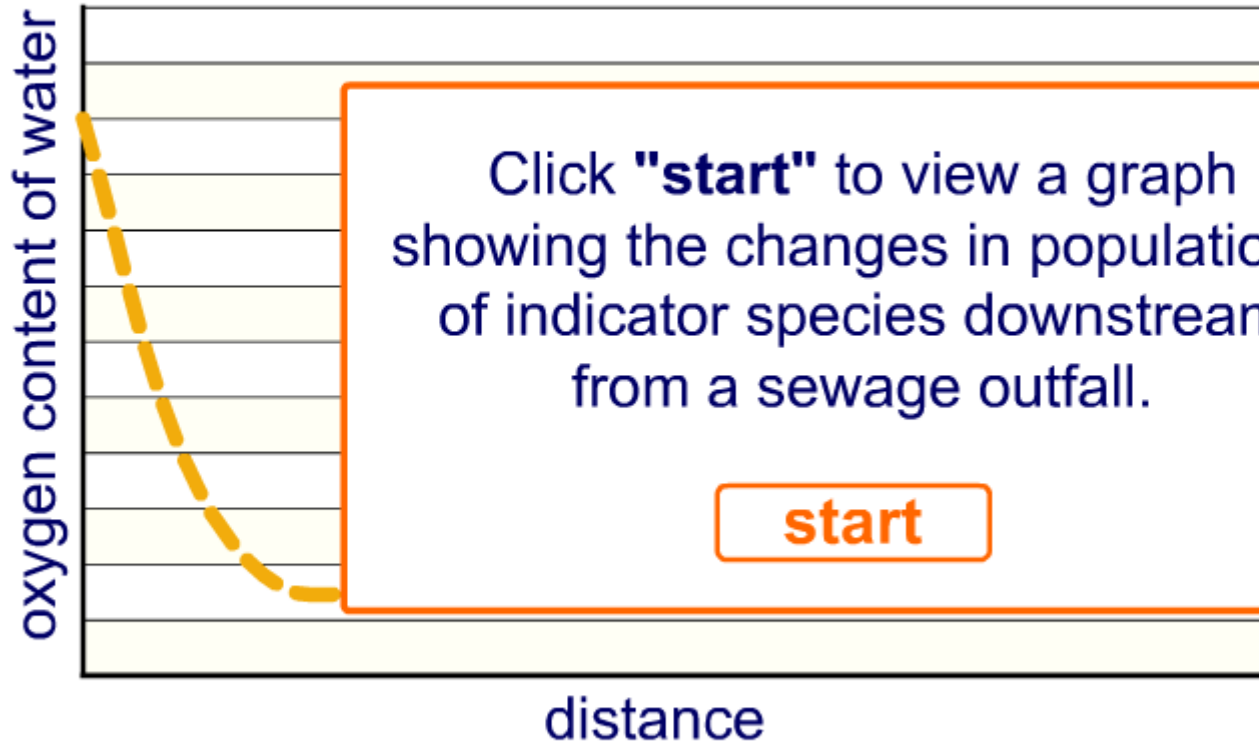
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↶



## How do populations of different organisms indicate the levels of pollution?



- species**
- sludgeworm & rat-tailed maggot
  - blood worm
  - water louse
  - stonefly nymph
  - oxygen





# Using indicator species

