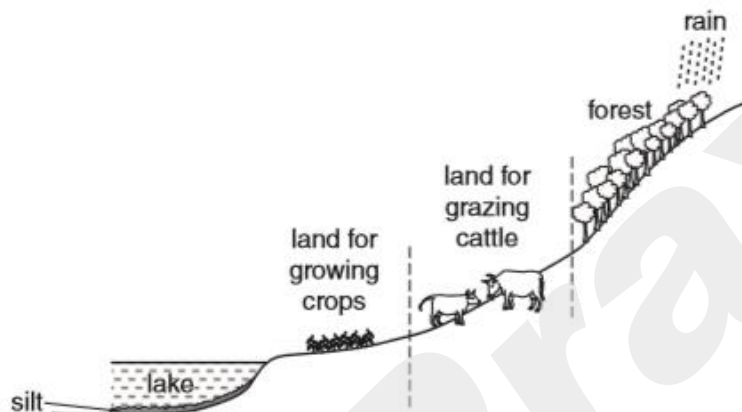# Human influences on ecosystem

IGCSE Biology Topical Questions Paper 1

May/June 2003

38 The diagram shows how some land near a lake is used.

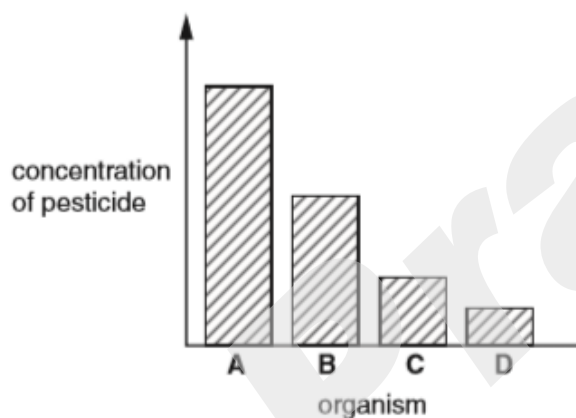Which of the following is most likely to cause the lake to flood?

A   cutting down the forest

B   removing the cattle

C   taking the silt out of the lake

D   using pesticides on the crops

39 The diagram shows part of a food chain in a lake.

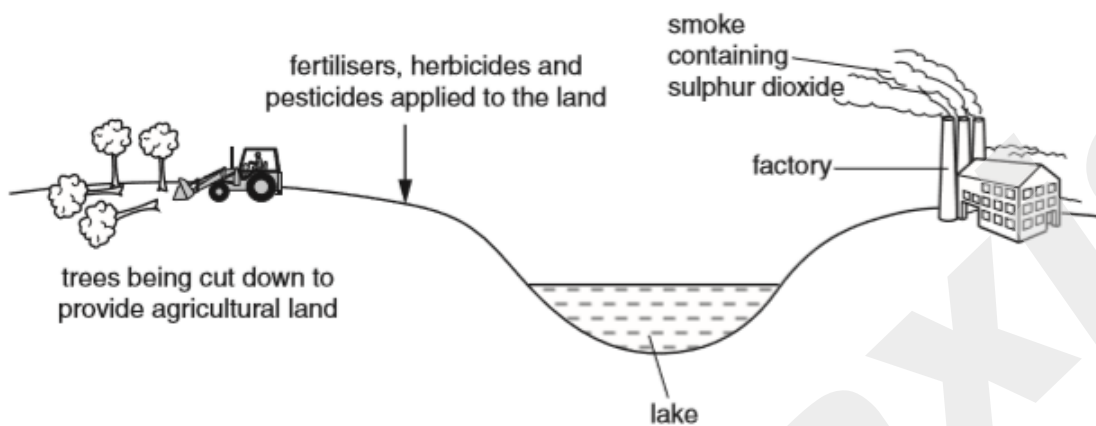| single-celled photosynthetic organism	→	small crustacean	→	frog	→	carnivorous bird

The chart shows the concentration of a pesticide in the bodies of each organism in the chain.

Which organism on the chart is the frog?

40 The diagram shows an area being developed for industry and agriculture.

Which would be the most likely to cause an initial increase in plant life in the lake?

A   fertilisers

B   herbicides

C   pesticides

D   smoke

Oct/Nov 2003

39   What is reduced by deforestation?
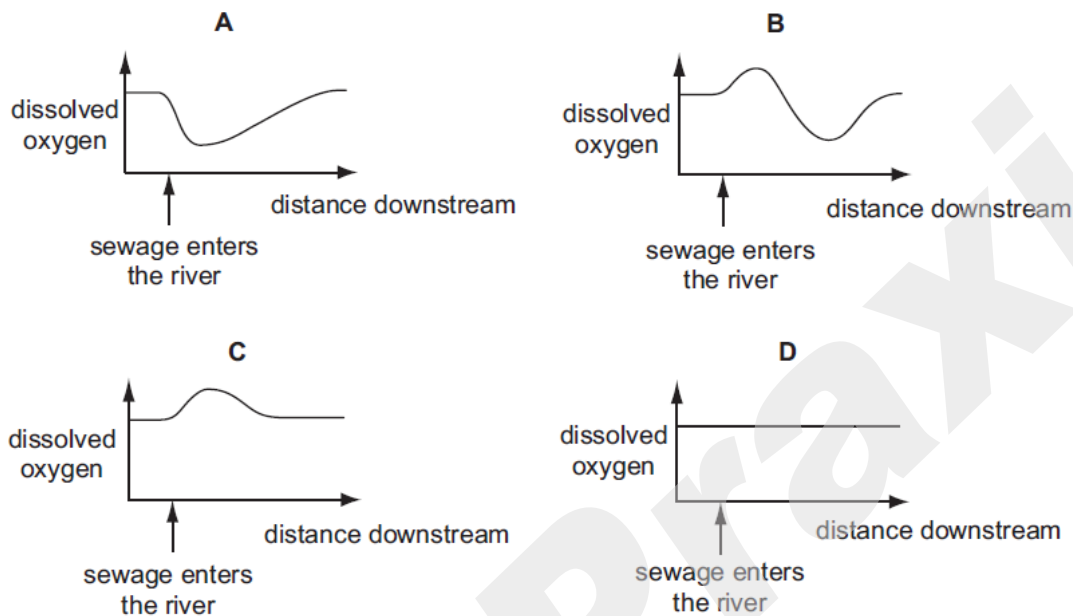
   A   force of rain hitting the ground

   B   rainwater run-off

   C   soil erosion

   D   soil fertility

40   What are the main undesirable effects of sulphur dioxide pollution released by factories, overuse of fertilisers and nuclear fall out?

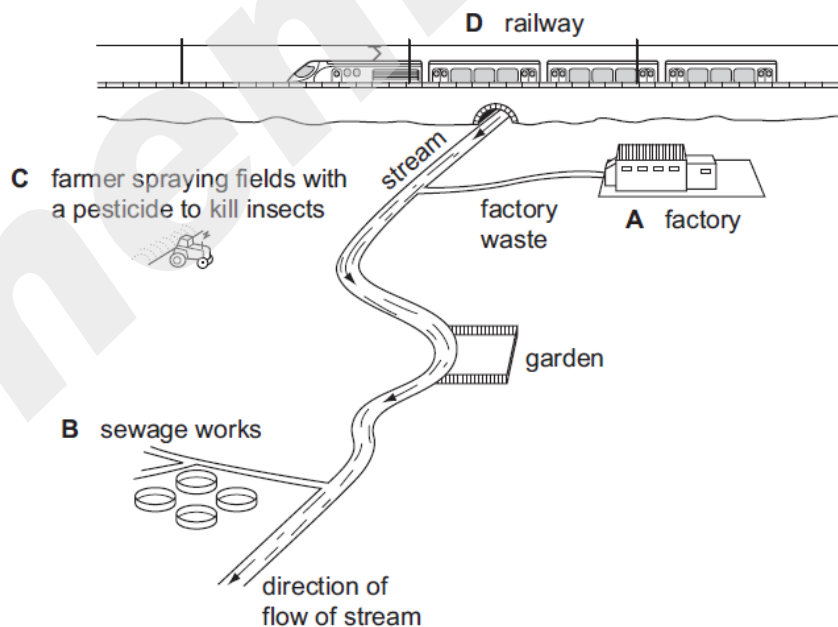|	sulphur dioxide pollution	overuse of fertilisers	nuclear fall out
A	acid rain	genetic mutations	eutrophication
B	acid rain	eutrophication	genetic mutations
C	genetic mutations	eutrophication	acid rain
D	eutrophication	acid rain	genetic mutations

May/June 2004

39 Which graph shows the effect of pollution by sewage on the amount of oxygen dissolved in a river?

40 A gardener planted some water plants in the stream at the bottom of the garden shown on the diagram. At first the plants grew well but after a while they died.
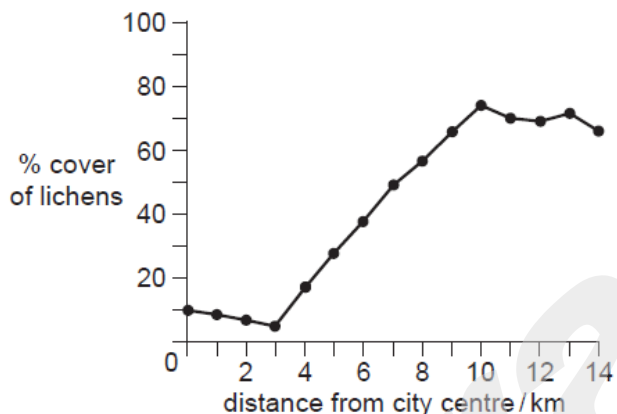
Which source of pollution is most likely to have caused the death of the plants?

Oct/Nov 2004

39 Lichens are living organisms that grow on trees. Air pollution slows down the growth of lichens.

The graph shows the average percentage of each tree covered by lichens at different distances from a city centre.

At which distance from the city centre is the air most polluted?

A	0 km	B	3 km	C	10 km	D	14 km

40 An insecticide sprayed on a crop washes into a lake in which there is the following food chain.

What are the most likely levels of the insecticide in the tissues of the organisms?
(ppm = parts per million.)

	producer / ppm	1st consumer / ppm	2nd consumer / ppm	3rd consumer / ppm
A	26.4	0.04	2.0	0.5
B	0.04	0.5	2.0	26.4
C	26.4	2.0	0.5	0.04
D	0.5	26.4	0.04	2.0

May/June 2005

40 What changes in the concentration of oxygen, number of bacteria and number of fish are caused by sewage entering a river?

	concentration of oxygen	number of bacteria	number of fish
A	decreases	decreases	increases
B	decreases	increases	decreases
C	increases	decreases	decreases
D	increases	increases	increases

Oct/Nov 2005

36 What are the effects of sewage pollution on the oxygen concentration and the number of bacteria in a river?

	oxygen concentration	number of bacteria
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

39 Which is a reason for conserving plant species?

    A   to absorb oxygen from the air

    B   to decrease rainfall

    C   to obtain drugs for medicinal use

    D   to release carbon dioxide into the air

40 The table shows the numbers of fish in a river downstream of a factory that started to release waste hot water into the river in 1990.
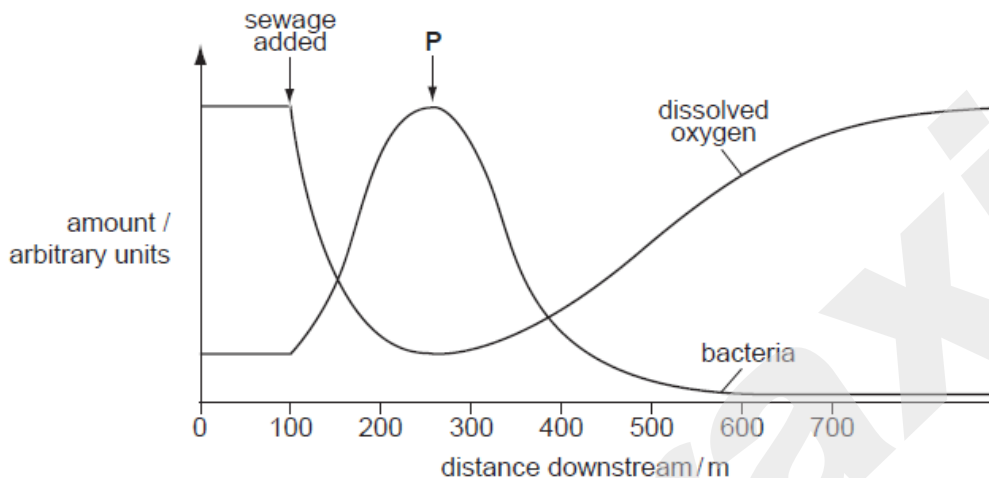
number of fish in	species								
	L	**M**	**N**	**O**	**P**	**Q**	**R**	**S**	**T**
1990	20	100	5000	1100	2	3	85	0	0
1992	150	2	100	65	0	0	560	30	26

What effect did the hot water have on the fish?

A   a decrease in the number of species

B   a decrease in the total number of fish

C   an increase in the number of species

D   an increase in the total number of fish

May/June 2006

40 The graph shows how oxygen concentration and numbers of bacteria change when sewage is added to a river.

What describes the oxygen concentration and the numbers of bacteria between the point at which sewage is added and point **P**?

A   Oxygen concentration and numbers of bacteria stay the same.

B   Oxygen concentration decreases and numbers of bacteria increase.

C   Oxygen concentration increases and numbers of bacteria decrease.

D   Oxygen concentration remains the same and numbers of bacteria increase.

Oct/Nov 2006

38 What is an effect of deforestation?

    A   more erosion

    B   more species

    C   more transpiration

    D   more variety of habitats

39 Weeds are growing in a crop.

What should be used to remove the weeds?

    A   artificial fertiliser

    B   herbicide

    C   organic manure

    D   pesticide

40 A pollutant causes a type of plant to lose its green colour.

How will this pollutant affect plants of this type over a long period of time?

    A   Colourless mutants will survive.

    B   Larger leaves will be produced.

    C   There will be no long-lasting effects.

    D   This type of plant will not survive.

May/June 2007
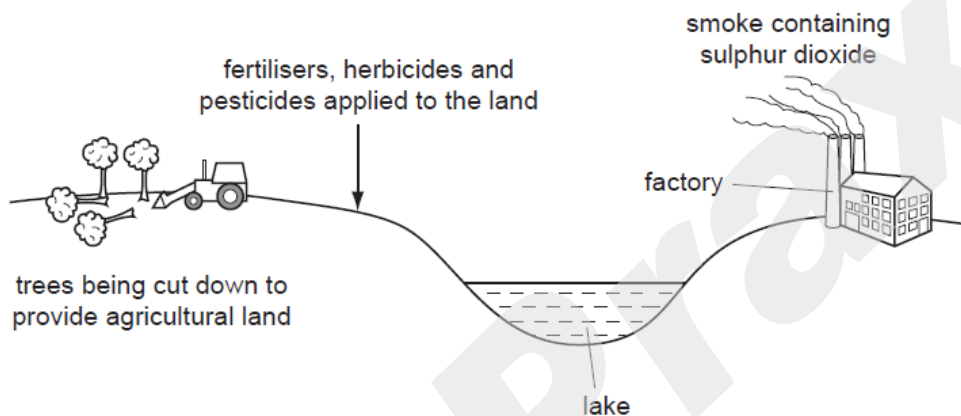
37 How will soil erosion and rainfall be affected by deforestation?

	soil erosion	rainfall
A	decrease	decrease
B	decrease	increase
C	increase	increase
D	increase	decrease

39 Which human activity helps to prevent the extinction of animal species?

    A   creating more farmland

    B   creating nature reserves

    C   destroying natural habitats

    D   extracting natural resources

40 The diagram shows an area being developed for industry and agriculture.

Which would be the most likely to cause an initial increase in plant life in the lake?

    A   fertilisers

    B   herbicides

    C   pesticides

    D   smoke

Oct/Nov 2007

39 A large amount of herbicide is applied to a field. Heavy rainfall carries much of it into a nearby lake.

What will be the effect of this on the lake?

A   Herbicide decreases the growth of water plants.

B   Herbicide decreases the number of bacteria.

C   Herbicide increases the rate of evaporation from the lake.

D   Herbicide kills the fish.

40 The table shows the amount of carbon dioxide in the atmosphere in three different years.

year	1930	1980	1990
carbon dioxide / parts per million	300	330	370

What is the most likely cause of this change?

A   destruction of rainforests

B   increased use of fertilisers containing nitrogen

C   pollution of air by sulphur dioxide

D   rise in the sea level

May/June 2008

38 Why might pesticides sprayed onto the fields reduce a bean crop?

A   Pesticides damage plant leaves.

B   Pesticides damage plant roots.

C   Pesticides kill insects that feed on bean plants.

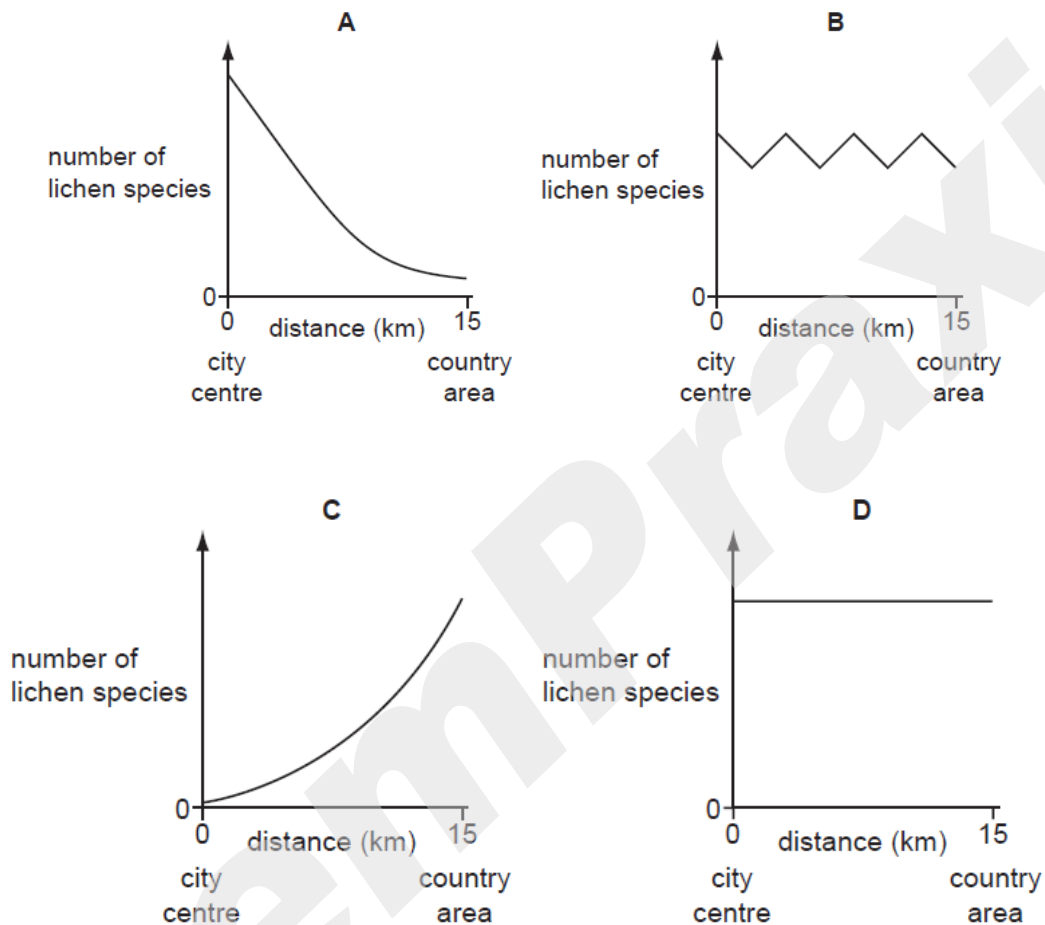**D**   Pesticides kill insects that pollinate bean plants.

39 What may cause the rapid growth of plants in a lake?

A   excess fertilisers

B   excess herbicides

C   low water pH

D   low water temperature

Oct/Nov 2008

38 Lichens are organisms that do **not** grow well in air containing sulphur dioxide.

Which graph shows the change in number of lichen species from the centre of an industrial city to a country area 15 km away?

A

number of
lichen species

distance (km)   15

city
centre

country
area

B

number of
lichen species

distance (km)   15

city
centre

country
area

C

number of
lichen species

distance (km)   15

city
centre

country
area

D

number of
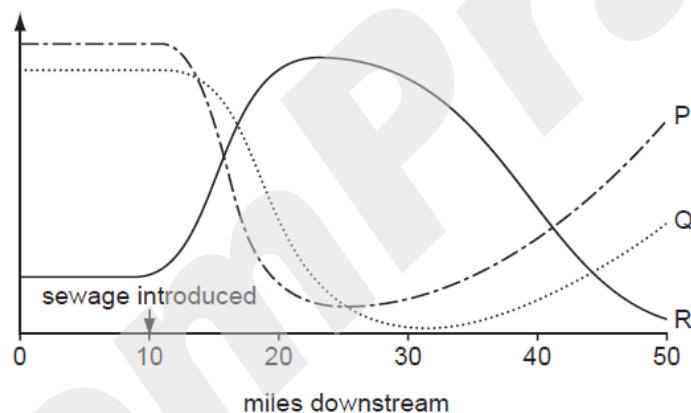lichen species

distance (km)   15

city
centre

country
area

39 Four water samples are collected from different places along a river. The average number of organisms per species and the number of different species of organisms are counted.

The table shows the results.

Which water sample is most polluted?

	average number of organisms per species	number of species
A	650	5
B	280	30
C	400	17
D	420	43

40 The graph shows how the concentration of oxygen and the numbers of fish and bacteria in a river change when sewage flows into it.

What are P, Q and R?

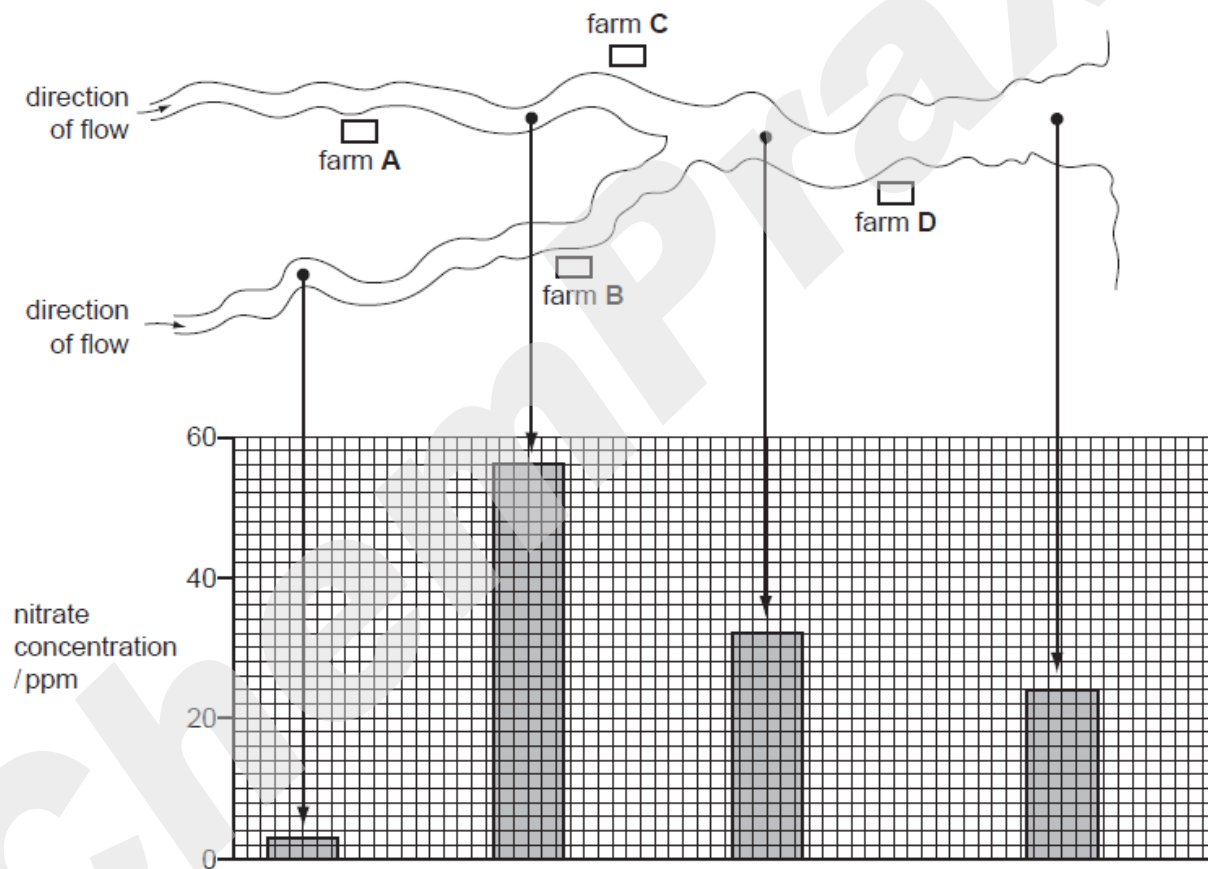|	P	Q	R
A	bacteria	oxygen	fish
B	fish	bacteria	oxygen
C	fish	oxygen	bacteria
D	oxygen	fish	bacteria

May/June 2009

38 What could be a consequence of deforestation?

    A   More habitats are produced for animals and plants.

    B   More transpiration may increase rainfall.

    C   Rainwater runs off the land causing flooding.

    D   Soil erosion is less likely.

39 The diagram shows the positions of four farms and the concentrations of nitrate at different points in a river.

Which farm is likely to have been using too much fertilizer on its land?

40 Untreated sewage can cause pollution of streams and rivers. Some changes in streams and rivers after sewage is added are shown.

    1   fish die

    2   the dissolved oxygen in the water decreases

    3   the number of anaerobic organisms increases

    4   the number of bacteria increases

What gives the order in which these events occur?

A $1 \rightarrow 2 \rightarrow 4 \rightarrow 3$

B $1 \rightarrow 4 \rightarrow 3 \rightarrow 2$

C $2 \rightarrow 1 \rightarrow 4 \rightarrow 3$

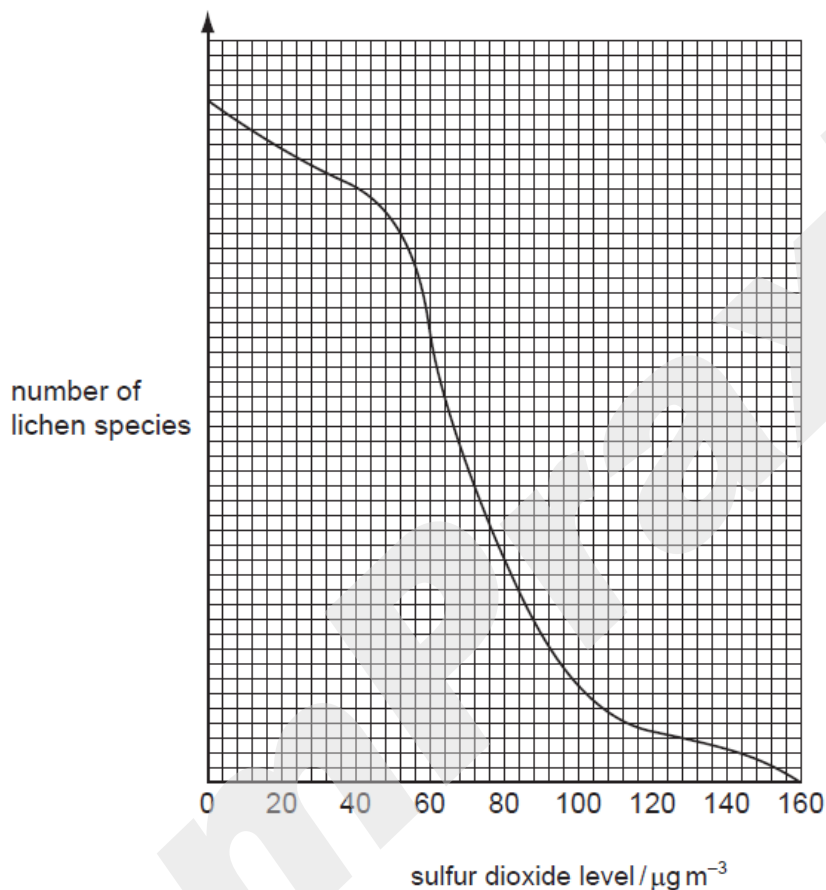**D** $4 \rightarrow 2 \rightarrow 1 \rightarrow 3$

Oct/Nov 2009

39 The levels of carbon dioxide in the Earth's atmosphere have increased during the last one hundred years.

What is the **most** likely cause of this?

A   cutting down large areas of forest

B   increased production of crops

C   over-use of inorganic fertilisers

D   widespread use of pesticides

40 The graph shows the relationship between sulfur dioxide pollution and the number of lichen species found on trees.

number of
lichen species

sulfur dioxide level / $\mu g\,m^{-3}$

From the graph, which statement is correct?

A As sulfur dioxide levels increase the number of lichen species decreases.

B Lichens cannot survive if any sulfur dioxide is present.

C Lichens are not affected by sulfur dioxide pollution.

D As sulfur dioxide levels increase so do numbers of lichen species.

17

38 What is reduced when untreated sewage is released into rivers?

  A   the amount of nitrate

  B   the concentration of carbon dioxide

  C   the concentration of oxygen

  D   the number of bacteria

39 The diagram shows a food chain.

A farmer sprays his cabbages with pesticide.

Which organisms does the farmer want to kill?

A	B	C	D
cabbages $\longrightarrow$	greenflies $\longrightarrow$	beetles $\longrightarrow$	small birds

40 What is an effect of pollution by nuclear fall-out?

  A   deforestation

  B   eutrophication

  C   global warming

  D   increased mutation rate