

Exercise walk-through

10.2

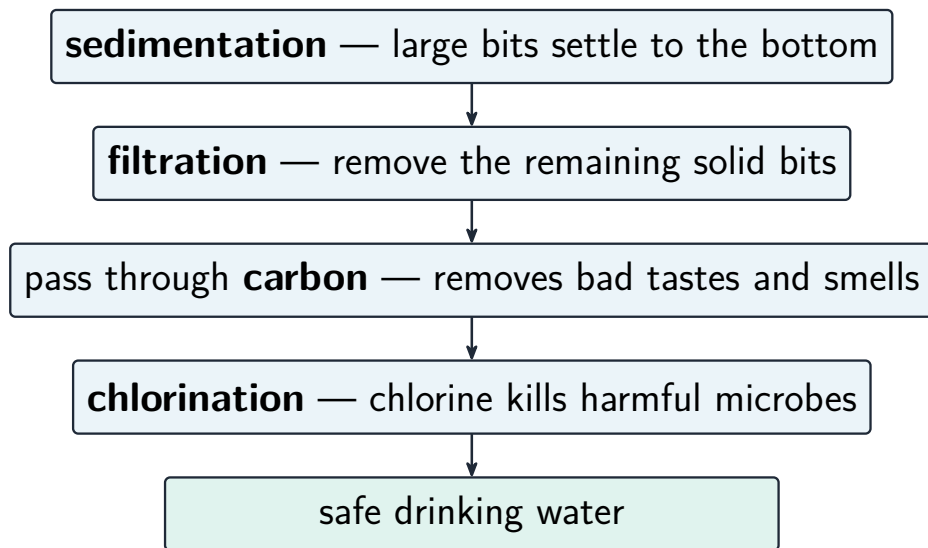
Fertilisers

IGCSE Chemistry

What we will cover

- 1 Water: testing & treating
- 2 Fertilisers
- 3 The composition of air
- 4 Air pollutants & their effects
- 5 The greenhouse effect
- 6 Reducing pollution

Treating drinking water



Steps to make water safe:

- **sedimentation** & **filtration** remove solids
- **carbon** removes tastes & smells
- **chlorination** kills microbes

Fertilisers (NPK) add nitrogen, phosphorus & potassium.

The pollutants, and how each is dealt with

Oxides of nitrogen

Cause acid rain, **photochemical smog** and breathing problems.
A catalytic converter turns them back into nitrogen.

Sulfur dioxide

Flue gas desulfurisation uses **calcium oxide** to remove it before the gases leave the chimney – or switch to a low-sulfur fuel.

Water pollution

Waste water may carry dissolved oxygen, metal compounds, plastics, **sewage**, harmful **microbes**, and **nitrates** and **phosphates** from fertilisers and detergents.

Testing purity

Pure water melts at exactly 0°C and boils at exactly 100°C – so the **melting point** and boiling point are the test.

Name the pollutant, its source, its effect and the control. Four parts, and most questions here ask for two of them.

Exercises 2.1·2.2

2.1 State what fertilisers are used for.

[1]

2.2 Name the three elements in an NPK fertiliser.

[3]

Exercises 2.1·2.2

2.1 State what fertilisers are used for.

[1]

2.1

- fertilisers **help plants grow** by replacing nutrients in the soil
-

2.2 Name the three elements in an NPK fertiliser.

[3]

2.2

- **nitrogen, phosphorus and potassium**

Exercise 3.1

3.1 The letter N in NPK fertiliser stands for:

[1]

☐

A sodium

B nickel

C nitrogen

D neon

Exercise 3.1

3.1 The letter N in NPK fertiliser stands for:

[1]

☐

A sodium

B nickel

C nitrogen

D neon

3.1 C

- N stands for **nitrogen**
- A, B and D are different elements

Exercise 3.2 (a)

3.2 Ammonium nitrate is used as a fertiliser.

(a) Name the element it supplies that promotes leaf growth.

[1]

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[1]

(a)

- **nitrogen** promotes leaf growth

Exercise 3.2 (b)

3.2 Ammonium nitrate is used as a fertiliser.

(b) Explain one problem caused if too much fertiliser washes into rivers.

[2]

Exercise 3.2 (b)

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(b) Explain one problem caused if too much fertiliser washes into rivers.

[2]

(b)

- extra nitrates cause **deoxygenation** of the water
- which **harms aquatic life**

Exercise 3.3

3.3 An NPK fertiliser supplies nitrogen, phosphorus and potassium. Explain why ammonium nitrate supplies only one of those NPK elements. Give a three-step explanation of how excess fertiliser runoff can reduce dissolved oxygen in a lake. [4]

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3.3

Its formula contains N but no P or K; nutrients promote algal growth; algae or other increased plant material dies and is decomposed by microorganisms; their respiration uses dissolved oxygen.