

Exercise walk-through

10.1

Water

IGCSE Chemistry

Water: testing and purity

is water present?

anhydrous cobalt
chloride blue → pink; cop-
per sulfate white → blue

is water pure?

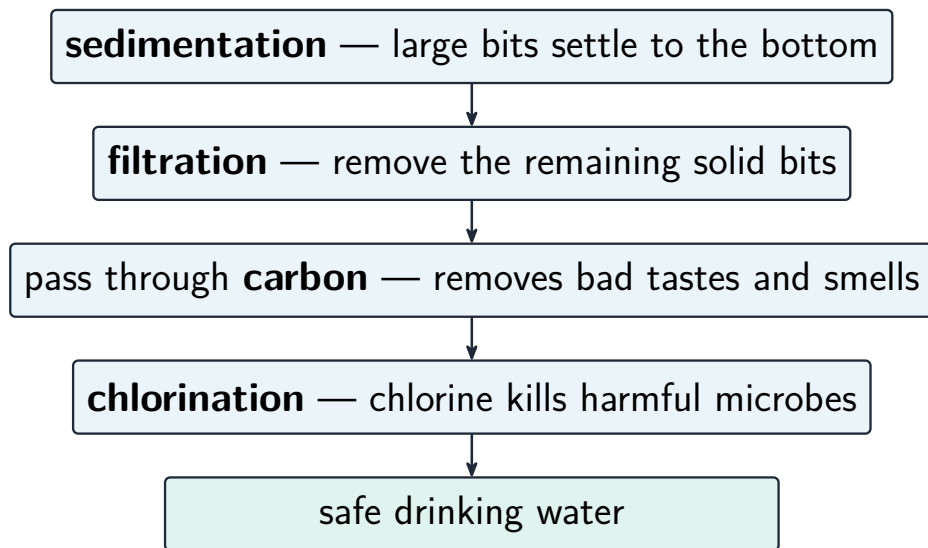
pure water melts at exactly
 0°C & boils at 100°C ;
impurities change these

Natural water carries dissolved O_2 , minerals,
nitrates & **phosphates**
(which cause **deoxygenation**), and
microbes.



*Air pollution harms health and the
environment*

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.

Exercises 2.1·2.2

2.1 A student is given a colourless liquid and a strip of dry cobalt(II) chloride paper. Describe what she would see if the liquid contains water, and state what this test does **not** tell her. [2]

2.2 State the role of chlorine in water treatment. [1]

Exercises 2.1·2.2

2.1 A student is given a colourless liquid and a strip of dry cobalt(II) chloride paper. Describe what she would see if the liquid contains water, and state what this test does **not** tell her. [2]

2.1

- cobalt(II) chloride paper turns **blue to pink**
 - the test shows water is present, **not** that the liquid is **pure**
-

2.2 State the role of chlorine in water treatment. [1]

2.2

- chlorine **kills harmful microbes**

Exercise 3.1

3.1 To show that a sample of water is **pure**, you would:

[1]

☐

A add cobalt(II) chloride

B check it boils at exactly 100 °C

C filter it

D add chlorine

Exercise 3.1

3.1 To show that a sample of water is **pure**, you would:

[1]

☐

A add cobalt(II) chloride

B check it boils at exactly 100 °C

C filter it

D add chlorine

3.1 B

- pure water **boils at exactly** 100 °C
- A tests for water, not purity; C and D do not prove purity

Exercise 3.2 (a)

3.2 Drinking water is treated in steps.

(a) State the purpose of passing the water through carbon.

[1]

Exercise 3.2 (a)

3.2 Drinking water is treated in steps.

(a) State the purpose of passing the water through carbon.

[1]

(a)

- carbon removes bad tastes and smells

Exercise 3.2 (b)

3.2 Drinking water is treated in steps.

(b) Explain why nitrates in natural water can be harmful to aquatic life.

[2]

Exercise 3.2 (b)

3.2 Drinking water is treated in steps.

(b) Explain why nitrates in natural water can be harmful to aquatic life.

[2]

(b)

- nitrates cause **deoxygenation** of the water
- so aquatic life **cannot get enough oxygen**

Exercise 3.3

3.3 Explain why distilled water, not tap water, is used in chemistry experiments. [2]

Exercise 3.3

3.3 Explain why distilled water, not tap water, is used in chemistry experiments. [2]

3.3

- tap water contains **dissolved impurities**
- these could interfere with reactions; distilled water has **far fewer impurities**