



STEM for WATER
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How can we purify and save water at home?

STEM solutions we can measure, test and improve

Water conservation and safe water use

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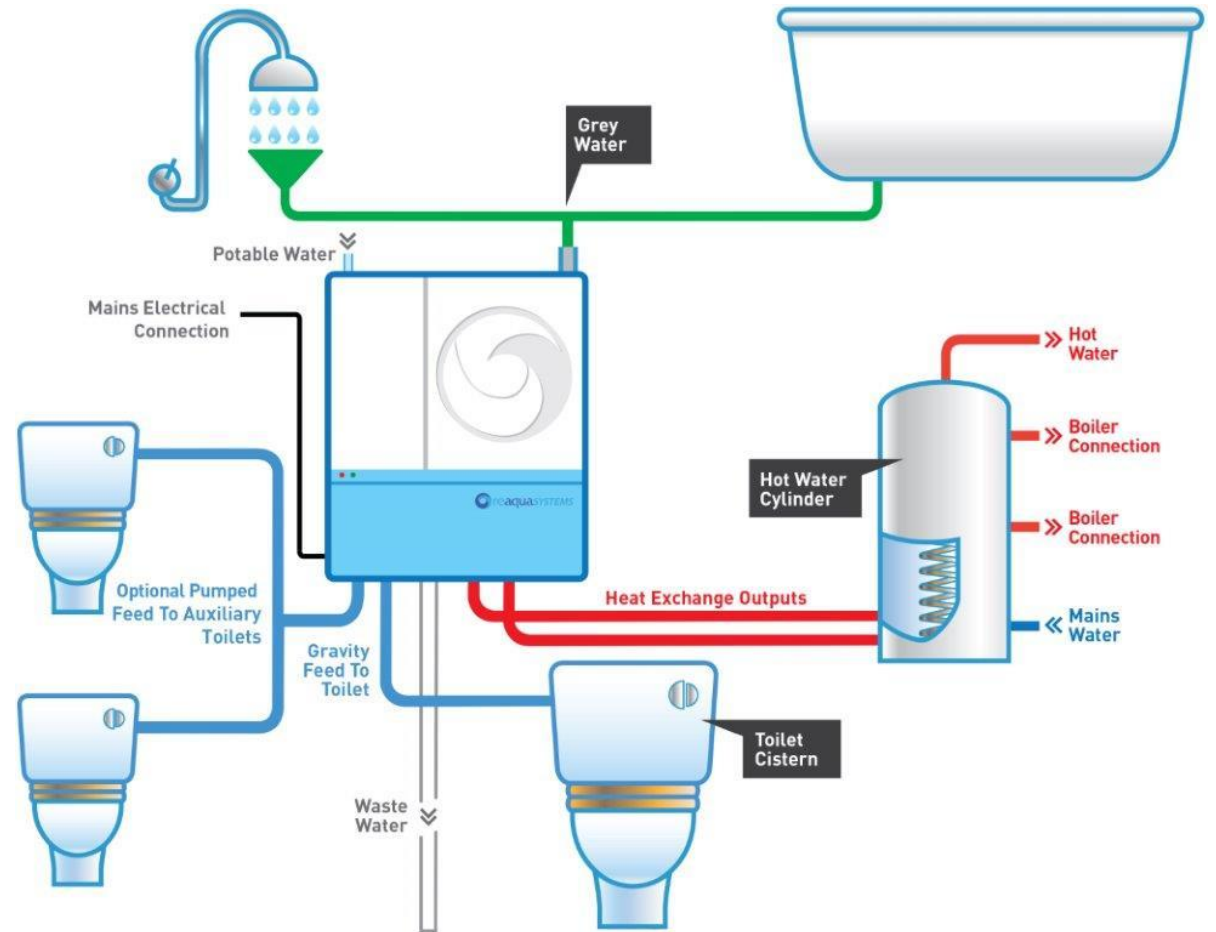


Our household water question

Where do we use water each day?

How can we reduce waste without reducing hygiene?

Which treatment makes water suitable for a specific use?



STEM method: measure → change one thing → measure again

Find leaks and measure tap flow

Fill a 1 L container and record the time three times.

Flow rate (L/min) = $60 \div \text{seconds per litre}$.

Example: 1 L in 8 seconds = 7.5 L/min.



Compare the same tap before and after a repair or approved aerator.

Safer ways to use less water

Repair dripping taps and running toilets.

Close the tap while brushing teeth or soaping hands.

Use a full dishwasher or washing-machine load when practical.

Water plants according to soil moisture and weather.

Choose an action, then check whether the water meter changes.



A filter is an engineering model

Test layers of stones, sand, charcoal and cotton.

Use equal volumes of cloudy water for each design.

Compare clarity, flow time and collected volume.



Filtered water can still contain pathogens or dissolved chemicals.

What makes drinking water safe?

Use a safe, regulated tap supply where available.

Follow the local water authority if it issues a boil-water notice.

Household filters need the correct certification and maintenance.

Boiling can address many microbes, but not dissolved chemicals.

Clear water is not proof that it is safe to drink.



Rainwater and greywater at home

Collect rainwater in a covered, screened container.

Use it for suitable garden tasks, following local rules.

Greywater needs suitable treatment and safe plumbing.

Keep reused water separate from drinking water.



Potential rain (L) = roof area (m²) × rainfall (mm) × efficiency

A plant experiment at home

Compare two similar pots of the same plant.

Change only the watering method or mulch.

Record water added and plant growth weekly.

Measure plant health as well as water used.



Our seven-day household challenge

Days 1–2: record tap flow and meter readings.

Day 3: choose one practical change.

Days 4–7: repeat the same measurements.

Calculate saving (%) = $(\text{before} - \text{after}) \div \text{before} \times 100$.

Check whether household size and weather changed too.

