

Water · supported focus

Supported focus · SL

Supported scope

- Supported SL focus. First assessment 2026; current SL/HL brief acquired. Remaining guide, assessment and practical requirements retain their recorded holds.
- State model conditions and distinguish fictional data from measurements.

Ess Water · 1.1

Reasoning

A downstream sample has less dissolved oxygen after a nutrient input. The explanation must connect biological processes with the water-system evidence. Start with a prediction. State the quantities or features you would compare, then decide what evidence could distinguish two explanations.

Ess Water · 2.1

Reasoning

Eutrophication can begin with nutrient enrichment, followed by greater producer growth and increased decomposition after organisms die. Decomposer respiration can lower dissolved oxygen. Water availability depends on quantity, quality and access. eutrophication: Nutrient enrichment with ecological consequences; pollutant load : Mass of pollutant transferred per time.

Ess Water · 3.1

Reasoning

Distinguish concentration from total pollutant load. Dilution can reduce concentration without removing the pollutant mass. A management plan should consider upstream causes, users and effects on other parts of the catchment. Collect approved water-quality observations at matched sites and times. Use calibrated instruments and consistent sampling depth. Avoid contact with contaminated water and do not infer potability from clarity.

Ess Water · 4.1

Reasoning

State the known values and their units. Choose the relation because its assumptions fit this case, then rearrange before substitution. Known: concentration is 2 mg per litre and flow is 500 litres per minute. $\text{Load} = \text{concentration} \times \text{flow} = 2 \times 500 = 1,000 \text{ mg per minute} = 1 \text{ g per minute}$. A lower concentration during high flow can still produce a high total load.

Ess Water · 4.2

Reasoning

Concentration is 3 mg/L and flow 200 L/min. Find load in mg/min. Use the same sequence: known quantities $\rightarrow$ model $\rightarrow$ relation $\rightarrow$ substitution $\rightarrow$ unit and interpretation.

Ess Water · 5.1

Reasoning

Clear water is not necessarily safe water. Nutrient enrichment does not directly use up oxygen; the pathway includes biological activity and decomposition. Return to the original observation. Explain what the result supports, which conditions it assumes, and one way to test a competing explanation.

Ess Water · 5.2

Reasoning

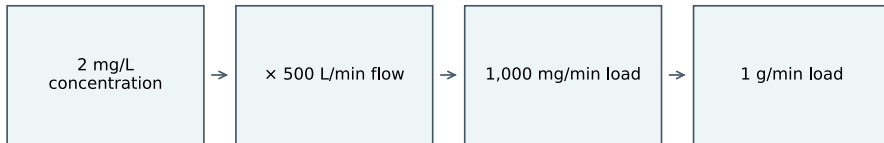
Clear water is always safe to drink. This claim is false: Clear water is not necessarily safe water. Nutrient enrichment does not directly use up oxygen; the pathway includes biological activity and decomposition.

Ess Water · 5.3

Reasoning

Water, pollution and management trade-offs: Distinguish concentration from total pollutant load. Dilution can reduce concentration without removing the pollutant mass. A management plan should consider upstream causes, users and effects on other parts of the catchment.

Ess Water · diagram



- Original teaching diagram: Water, pollution and management trade-offs
- Use the labels and the stated model together.

Ess Water · original transfer

Your turn

Fictional river A has 4 mg/L at 100 L/min; B has 2 mg/L at 300 L/min. Compare concentration and load. Why need dilution not reduce transported mass?

Ess Water · transfer reasoning

Method and interpretation

Loads 400 and 600 mg/min. B has lower concentration but greater load. Added water can dilute without removing pollutant; varying flow, concentration and sampling matter.

Check yourself

- Explain eutrophication using the stated model.
- Explain pollutant load using the stated model.
- Change one value in the original transfer; explain which assumption still matters.