

Exercise walk-through

8.5

Eutrophication

AP Environmental Science

Eutrophication

Too many nutrients set off a chain that suffocates the water:

- nutrients run off → **algal bloom**
- algae die, bacteria decay → **hypoxic** dead zone

Cultural eutrophication : human phosphorus and nitrogen speed it up.



Algal bloom: nutrient run-off fuels hypoxia

Exercises 2.1-2.3

2.1 What nutrients cause eutrophication?

[1]

2.2 What happens to oxygen levels during eutrophication?

[1]

2.3 What is a dead zone?

[1]

Exercises 2.1-2.3

2.1 What nutrients cause eutrophication? [1]

2.1

- Nitrogen and phosphorus
-

2.2 What happens to oxygen levels during eutrophication? [1]

2.2

- Oxygen is depleted (hypoxia)
-

2.3 What is a dead zone? [1]

2.3

- An area of water with too little oxygen to support most life

Exercise 3.1

3.1 Fish die during eutrophication because decomposition of algae

[1]

☐

A adds oxygen

B uses up the oxygen (causing hypoxia)

C removes nutrients

D cools the water

Exercise 3.1

3.1 Fish die during eutrophication because decomposition of algae

[1]

☐

A adds oxygen

B uses up the oxygen (causing hypoxia)

C removes nutrients

D cools the water

3.1 B

- uses up the oxygen (causing hypoxia)

Exercise 3.2 (a)

3.2 Fertilizer runs off farmland into a lake.

(a) Describe the sequence that leads to fish deaths.

[3]

Exercise 3.2 (a)

3.2 Fertilizer runs off farmland into a lake.

(a) Describe the sequence that leads to fish deaths.

[3]

(a)

- Excess nutrients cause an algal bloom; the algae die and decompose; decomposers use up the oxygen, so fish suffocate

Exercise 3.2 (b)

3.2 Fertilizer runs off farmland into a lake.

(b) State one way to prevent this.

[1]

Exercise 3.2 (b)

3.2 Fertilizer runs off farmland into a lake.

(b) State one way to prevent this.

[1]

(b)

- Any one: buffer strips, reduced fertilizer, better sewage treatment

Exercise 3.3

3.3 Explain why adding phosphorus in particular can trigger a bloom.

[2]

Exercise 3.3

3.3 Explain why adding phosphorus in particular can trigger a bloom. [2]

3.3

- Phosphorus is usually the limiting nutrient, so adding it removes the limit and lets algae grow explosively