

Exercise walk-through

8.14

Pollution and Human Health

AP Environmental Science

Pollution and health

Harm depends on **dose**, time, and sensitivity.

- **acute** vs **chronic** effects
- **risk analysis** sets safe limits

Infectious disease spreads by
pathogens; **environmental**
change widens its reach.

dirty water → cholera

air → flu

vectors : mosquito → malaria

Pathogens and Infectious Diseases

Pathogens (bacteria, viruses, parasites) spread through contaminated water and food.

The exam names specific diseases and expects you to know **how each one is transmitted**, because the transmission route decides the defence:

The pathogens the exam names, and how each travels

dysentery

bacterial – untreated sewage in streams and rivers

plague

bacterial – an infected flea's bite, or infected fluids

tuberculosis

bacterial – breathing in an infected person's bacteria

malariaparasitic – an infected **mosquito** ; sub-Saharan Africa**West Nile / Zika**

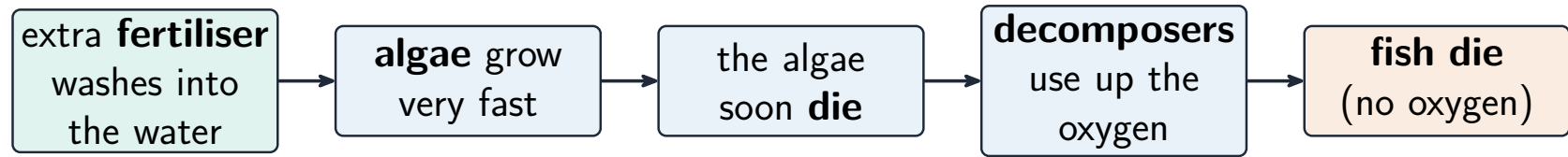
viral – an infected mosquito again; Zika also passes sexually

SARS / MERS

viral – infected fluids; MERS crosses from animals

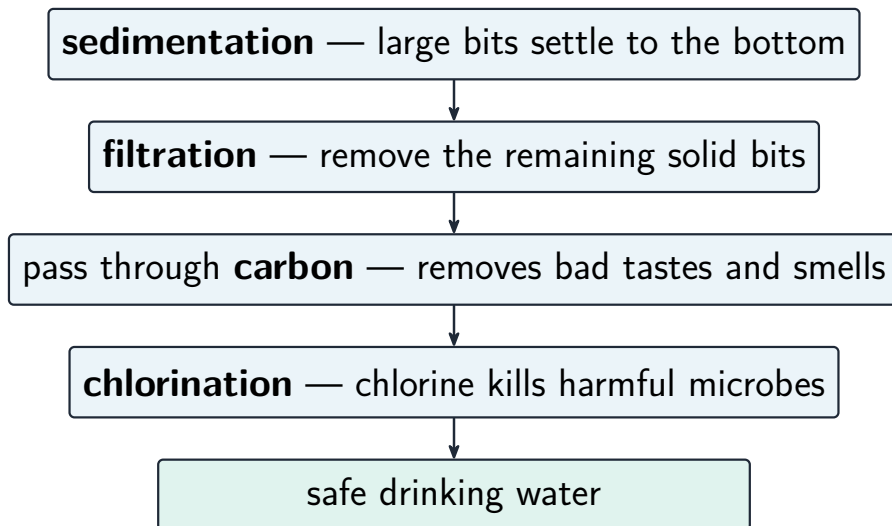
Poverty deepens all of it: low-income areas often lack sanitary waste disposal and clean water in the first place.

Eutrophication, continued



Extra fertiliser makes algae bloom, then the water loses its oxygen

Sewage Treatment



Treating water to make it safe: sedimentation, filtration, then disinfection

Exercises 2.1-2.3

2.1 Distinguish acute from chronic exposure.

[2]

2.2 What is a carcinogen?

[1]

2.3 Name one neurotoxin.

[1]

Exercises 2.1-2.3

2.1 Distinguish acute from chronic exposure. [2]

2.1

- Acute is a single short high-dose exposure; chronic is repeated low-dose exposure over a long time

2.2 What is a carcinogen? [1]

2.2

- A substance that causes cancer

2.3 Name one neurotoxin. [1]

2.3

- Any one: lead, mercury

Exercise 3.1

3.1 A substance that causes birth defects is a

[1]

☐

A carcinogen

B neurotoxin

C teratogen

D nutrient

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3.1 A substance that causes birth defects is a

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3.1 C

- a teratogen

Exercise 3.2 (a)

3.2 Children in old housing are exposed to lead paint over many years.

(a) State whether this is acute or chronic exposure.

[1]

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[1]

(a)

- Chronic

Exercise 3.2 (b)

3.2 Children in old housing are exposed to lead paint over many years.

(b) Classify lead's health effect and explain the concern for children.

[2]

Exercise 3.2 (b)

3.2 Children in old housing are exposed to lead paint over many years.

(b) Classify lead's health effect and explain the concern for children. [2]

(b)

- Lead is a neurotoxin; it damages the developing brain, so children are especially at risk of learning and developmental problems

Exercise 3.3

3.3 Explain why chronic low-dose exposure can be hard to detect but still harmful. [2]

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3.3

- The effects build up slowly and may resemble other conditions, so the cause is hard to identify, yet the accumulated damage can be serious