

Exercise walk-through

8.1

Sources of Pollution

AP Environmental Science

Point and nonpoint sources

Pollution is sorted by whether we can trace it:

- **point source** : one clear pipe or stack
- **nonpoint source** : many spread-out places

Nonpoint (farm run-off) is far harder to control – no single pipe to plug.



Mangroves

Thermal pollution

what it is

heat added to water, usually from power-station cooling

why it harms

warm water holds **less dissolved oxygen**, and stresses species adapted to a cooler range

who suffers first

cold-water fish – trout and salmon – and the invertebrates they feed on

the fix

cooling towers and holding ponds, so the water sheds its heat before it returns to the river

Thermal pollution adds no substance at all. It is the one pollutant you cannot filter out – only let go of.

Human Impacts on Ecosystems

Human activities – pollution, habitat destruction, overharvesting, introducing species – degrade ecosystems and reduce biodiversity.

Because species are interconnected, harming one part can ripple through the whole system.

Endocrine Disruptors

Endocrine disruptors are chemicals (some pesticides, plasticizers like BPA) that mimic or block hormones, disrupting growth, reproduction.

Human Impacts on Wetlands and Mangroves

Wetlands and **mangroves** filter pollutants, store floodwater, and nurse young fish, but they are drained and cleared for farms, shrimp ponds, and development.

Losing them removes valuable ecosystem services and coastal protection.

Exercises 2.1-2.3

2.1 What is a point-source pollutant?

[1]

2.2 Give one example of nonpoint-source pollution.

[1]

2.3 Why is nonpoint pollution harder to control?

[1]

Exercises 2.1-2.3

2.1 What is a point-source pollutant? [1]

2.1

- Pollution from a single, identifiable location
-

2.2 Give one example of nonpoint-source pollution. [1]

2.2

- Any one: farm fertilizer runoff, road/urban runoff
-

2.3 Why is nonpoint pollution harder to control? [1]

2.3

- It comes from a wide, spread-out area, so it is hard to trace and control

Exercise 3.1

3.1 Fertilizer runoff from many farms is an example of

[1]

☐

A point-source pollution

B nonpoint-source pollution

C air pollution only

D no pollution

Exercise 3.1

3.1 Fertilizer runoff from many farms is an example of

[1]

☐

A point-source pollution

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3.1 B

- nonpoint-source pollution

Exercise 3.2 (a)

3.2 A river is polluted by both a factory pipe and farm runoff.

(a) Classify each source.

[2]

Exercise 3.2 (a)

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(a) Classify each source.

[2]

(a)

- Factory pipe = point source; farm runoff = nonpoint source

Exercise 3.2 (b)

3.2 A river is polluted by both a factory pipe and farm runoff.

(b) Explain why the farm runoff is harder to regulate.

[2]

Exercise 3.2 (b)

3.2 A river is polluted by both a factory pipe and farm runoff.

(b) Explain why the farm runoff is harder to regulate. [2]

(b)

- The runoff comes from many spread-out fields rather than one pipe, so there is no single source to regulate

Exercise 3.3

3.3 Suggest one way to reduce nonpoint-source pollution from agriculture. [1]

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3.3

- Any one: buffer strips, reduced/precise fertilizer, cover crops, no-till