

Exercise walk-through

8.3

Endocrine Disruptors

AP Environmental Science

Where solid waste actually goes

sanitary land-fills

buried in lined cells to limit **leachate** ; takes land and can still leak

incinerators

burning cuts the *volume* sharply but emits air pollutants and leaves toxic ash

composting

organic waste returned to soil – the cheapest diversion there is

e-waste

phones, computers, televisions – small in volume, but loaded with **toxic metals**

garbage patches

ocean-dumped plastic gathered by currents into vast floating fields far out at sea

The hierarchy is **reduce**, **reuse**, **recycle** – and reducing is best because waste you never make needs no disposal at all.

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

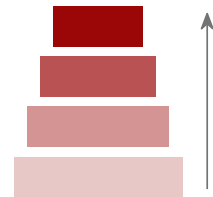
SARS / MERS

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.

Check yourself

- 1 Is farm run-off a point or nonpoint source?
- 2 What uses up the oxygen in a eutrophic dead zone?
- 3 Who carries the highest biomagnified toxin dose?
- 4 Does a lower LD_{50} mean more or less toxic?



Answers 1. nonpoint 2. bacteria decomposing dead algae 3. top predators 4. more toxic

Exercises 2.1-2.3

2.1 What system do endocrine disruptors interfere with?

[1]

2.2 Give one example of an endocrine disruptor.

[1]

2.3 Why can very low doses have large effects?

[1]

Exercises 2.1-2.3

2.1 What system do endocrine disruptors interfere with? [1]

2.1

- The endocrine (hormone) system
-

2.2 Give one example of an endocrine disruptor. [1]

2.2

- Any one: atrazine, BPA, DDT
-

2.3 Why can very low doses have large effects? [1]

2.3

- Hormones act in tiny amounts, so even small pollutant doses can disrupt them

Exercise 3.1

3.1 Endocrine disruptors are dangerous because they interfere with

[1]

☐

A the skeleton

B hormones, even at low doses

C photosynthesis

D digestion only

Exercise 3.1

3.1 Endocrine disruptors are dangerous because they interfere with

[1]

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A the skeleton

B hormones, even at low doses

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3.1 B

- hormones, even at low doses

Exercise 3.2 (a)

3.2 A herbicide runs off into a pond and male frogs develop female traits.

(a) Explain how an endocrine disruptor could cause this.

[2]

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(a) Explain how an endocrine disruptor could cause this. [2]

(a)

- The chemical mimics a female hormone (estrogen), disrupting the frogs' hormone system and causing male frogs to develop female traits

Exercise 3.2 (b)

3.2 A herbicide runs off into a pond and male frogs develop female traits.

(b) State one effect on the frog population.

[1]

Exercise 3.2 (b)

3.2 A herbicide runs off into a pond and male frogs develop female traits.

(b) State one effect on the frog population.

[1]

(b)

- Reduced reproduction / skewed sex ratio, lowering population

Exercise 3.3

3.3 Explain why endocrine disruptors can be harmful even at concentrations far below those of typical toxins. [2]

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3.3

- They mimic or block hormones, which naturally work at very low concentrations, so tiny amounts can strongly disrupt development and reproduction