

Toxins In Food Chains

KS3 Biology · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

Give one way organisms affect their environment and one way they are affected by it.

Step 1 · Affect

Earthworms mix and aerate soil; beavers build dams that flood valleys and create wetlands; humans cut down forests.

Step 2 · Are affected by

Temperature, light, water, soil minerals and pollution all change where organisms can live and how well they grow.

Answer: e.g. beavers create wetlands; plants grow less in shade

Check: It works both ways — organisms and environment change each other.

2. Now try one with the steps

What is bioaccumulation?

Step 1 · Persistent toxins

Step 2 · Up the chain

Step 3 · Result

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. Give ONE way humans affect the environment. [1]

2. Give ONE way an earthworm affects its environment. [1]

3. Name ONE toxic chemical that builds up in food chains. [1]

4. In which organism in a food chain do persistent toxins reach the highest concentration? [1]
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5. Why do toxins like DDT build up in animals rather than leaving their bodies? [1]
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6. Give ONE effect DDT had on birds of prey. [1]
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7. Explain why a top predator gets a much higher dose of a toxin than the organisms it eats. [2]
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8. Plankton contain 0.04 ppm of a pesticide. Small fish are 10 times more concentrated. What concentration is in the small fish, in ppm? [1]
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9. If large fish are 10 times more concentrated again, what is their concentration, in ppm? [1]
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10. Mercury from industry built up in fish eaten by people in Minamata, Japan. Why were people who ate a lot of fish most affected? [2]
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11. An orca had PCB levels of 950 ppm. The level linked to harm is about 9 ppm. About how many times higher is that, to the nearest whole number? [1]
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12. Suggest why banning a pesticide does not immediately make top predators safe. [2]
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13. Suggest ONE way farmers could control pests without causing bioaccumulation. [1]
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14. Explain how a beaver dam can both help and harm other organisms. [2]
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4. Before you hand it in

"The toxin is in the water, so all organisms have the same amount."

Persistent toxins are stored and passed on, so they become more concentrated at each trophic level.

"Energy builds up like toxins."

Energy DECREASES at each level (used in respiration); persistent toxins INCREASE because they are not used or excreted.

"All chemicals bioaccumulate."

Only persistent, fat-soluble toxins (like DDT, PCBs, methylmercury) bioaccumulate.