

8.8 Bioaccumulation and Biomagnification

Name: _____ Class: _____ Date: _____ **Total: 10 marks****KEY WORDS** biomagnification 生物放大 • bioaccumulation 生物累积

Objective

Build the skills to answer exam questions on **bioaccumulation and biomagnification**.**You must be able to:**

- distinguish **bioaccumulation** 生物累积 from **biomagnification** 生物放大
- explain why top predators have the highest levels
- give examples (mercury, DDT)

1 Worked examples

Study these first. Each one shows the method for a question type used later — follow the steps and you can do the Practice and Exam-style questions yourself.

■ Bioaccumulation

Bioaccumulation is the build-up of a persistent toxin **within one organism** over its lifetime, because it is taken in faster than it is removed (stored in fat).

■ Biomagnification

Biomagnification is the **increase in concentration up the food chain**. Each predator eats many contaminated prey, so the toxin concentrates at each higher trophic level.

■ Top predators worst affected

Because levels multiply at each step, **top predators** (and humans) end up with the **highest** concentrations — sometimes millions of times the water level.

■ A worked example

Mercury enters water, is taken up by plankton (bioaccumulation), then concentrates through small fish → big fish → humans (biomagnification), which is why large predatory fish (tuna, shark) carry high mercury.

2 Practice

Now apply the methods above.

2.1 Define bioaccumulation. [1]**2.2** Define biomagnification. [1]**2.3** Which organisms have the highest toxin levels? [1]

3 Exam-style questions

3.1 Biomagnification describes toxins that [1]

A	B
C	D

A decrease up the food chain**B** increase in concentration up the food chain**C** stay constant**D** disappear**3.2** Mercury is released into a lake.

(a) Explain how it becomes concentrated in large fish. [3]

(b) State why humans are advised to limit eating large predatory fish. [1]

3.3 Explain why a toxin must be persistent to biomagnify. [2]