

8.14 Pollution and Human Health

Name: _____ Class: _____ Date: _____

Total: 10 marks

Objective

Build the skills to answer exam questions on **pollution and human health**.

You must be able to:

- distinguish **acute** 急性 and **chronic** 慢性 exposure
- classify health effects (carcinogens, neurotoxins, teratogens)
- link specific pollutants to health outcomes

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.

■ Acute vs chronic

- **Acute exposure** —a single, short, high-dose exposure (e.g. a chemical spill).
- **Chronic exposure** —repeated, low-dose exposure over a long time (e.g. living near a polluted site).

■ Types of harmful agents

- **Carcinogens** —cause cancer (e.g. asbestos, some POPs).
- **Neurotoxins** —damage the nervous system (e.g. lead, mercury).
- **Teratogens** —cause birth defects (e.g. some chemicals, alcohol).

■ Specific links

- **Lead** —brain damage, especially in children.
- **Mercury** —nervous-system damage (from contaminated fish).
- **Particulates** —respiratory and heart disease.

■ A worked classification

Lead is a **neurotoxin**; long-term low-level exposure in old paint or pipes is **chronic** and especially harms children's brain development.

2 Practice

Now apply the methods above.

2.1 Distinguish acute from chronic exposure. [2]

2.2 What is a carcinogen? [1]

2.3 Name one neurotoxin. [1]

3 Exam-style questions

3.1 A substance that causes birth defects is a [1]

- **A** carcinogen
- **B** neurotoxin
- **C** teratogen
- **D** nutrient

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

(a) State whether this is acute or chronic exposure. [1]

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

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

4 Go further

You are now ready for the real exam questions on this subtopic:

- work through the **8.14 Pollution and Human Health** lesson on the **Learn** page;
- read the **Pollution and Human Health** section of the AP Environmental Science handout on the **Know** page.

Solutions

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

2.2 A substance that causes cancer.

2.3 Any one: lead, mercury.

3.1 C —a teratogen.

3.2 (a) Chronic. (b) Lead is a neurotoxin; it damages the developing brain, so children are especially at risk of learning and developmental problems.

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.