

8.9 Solid Waste Disposal

Name: _____ Class: _____ Date: _____

Total: 10 marks

KEY WORDS incineration 焚烧 • leachate 渗滤液 • sanitary landfills 卫生填埋场

Objective

Build the skills to answer exam questions on **solid waste disposal**.

You must be able to:

- describe **sanitary landfills** 卫生填埋场 and **incineration** 焚烧
- state the pros and cons of each
- explain **leachate** 渗滤液 and methane

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.

■ Sanitary landfills

A **sanitary landfill** buries waste with a **liner** (to stop leaks) and daily soil cover. Concerns:

- **Leachate** — liquid that seeps through waste, which can contaminate groundwater if the liner fails.
- **Methane** — produced as waste decomposes (a greenhouse gas; can be captured for energy).

■ Incineration

Incineration burns waste, **reducing its volume** and able to generate energy, but releases **air pollutants** and leaves toxic **ash**.

■ Trade-offs

- **Landfill** — cheaper, but uses land and risks leachate/methane.
- **Incineration** — less volume/land, but air pollution and cost.

■ A worked judgement

A landfill saves money but must be lined and monitored to prevent leachate polluting groundwater and to capture methane.

2 Practice

Now apply the methods above.

2.1 What is leachate? [1]

2.2 What gas is produced as landfill waste decomposes? [1]

2.3 State one advantage of incineration. [1]

3 Exam-style questions

3.1 A liner is placed at the bottom of a landfill to [1]

- **A** produce methane
 - **B** stop leachate contaminating groundwater
 - **C** burn the waste
 - **D** add nutrients
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3.2 A city debates a landfill vs an incinerator.

(a) State one advantage and one disadvantage of the landfill. [2]

(b) State one advantage and one disadvantage of the incinerator. [2]

3.3 Explain how landfill methane can be turned from a problem into a resource. [2]

Solutions

2.1 Liquid that seeps through waste and can pollute groundwater.

2.2 Methane.

2.3 Any one: reduces waste volume, can generate energy.

3.1 B — stop leachate contaminating groundwater.

3.2 (a) Landfill — advantage: cheap; disadvantage: uses land / leachate / methane. (b) Incinerator — advantage: reduces volume / energy; disadvantage: air pollution / toxic ash / cost.

3.3 The methane can be **captured** and burned as fuel to generate electricity, turning a greenhouse-gas problem into an energy source.