

20 Addition polymerisation – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
poly(ethene)	聚乙烯	_____
non-biodegradable	不可生物降解	_____
recycle	回收	_____
incinerate	焚烧	_____

Recall

From Part 1 you know addition polymers like **poly(ethene)** 聚乙烯 and **PVC** are long chains of carbon. Their strength and stability are useful—but they make them hard to throw away.

- The same strong C–C chain that makes plastics useful makes them hard to break down.
- Disposal is a real environmental problem.

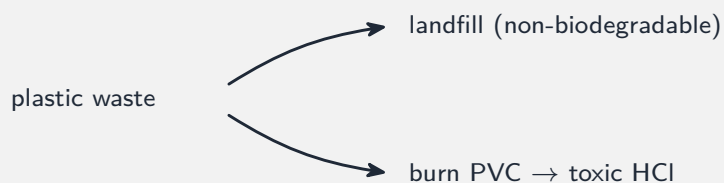
New ideas

Read these first, then do the Practice.

■ 1 Why disposal is hard

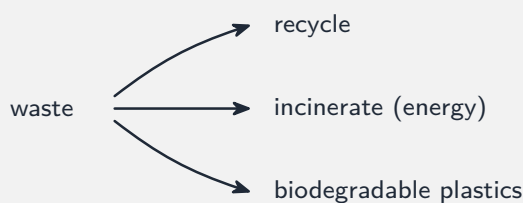
Poly(alkene)s are very hard to get rid of:

- they are **non-biodegradable** 不可生物降解—microbes cannot break them down, so they stay in the ground for a very long time.
- **burning** them can release harmful gases—for example, burning **PVC** gives off toxic **hydrogen chloride** (HCl).



■ 2 Ways to deal with the waste

- **recycle** 回收—sort, melt and remould the plastic.
- **incinerate** 焚烧—burn it (with the heat used for energy), but the gases must be cleaned.
- develop **biodegradable** plastics that microbes **can** break down.



Watch out: poly(alkene)s are non-biodegradable *because* their C–C and C–H bonds are strong and unreactive—the very property that makes them durable and useful. Burning PVC also releases toxic HCl.

Practice

Try these in order.

20.1 What does *non-biodegradable* mean? [1]

20.2 Why are poly(alkene)s non-biodegradable? [2]

20.3 Name the toxic gas given off when PVC is burned. [1]

20.4 State two ways to deal with plastic waste. [2]

20.5 Suggest one advantage of developing biodegradable plastics. [1]

20.6 Challenge. Explain why the very property that makes poly(alkene)s useful as materials also makes them a disposal problem. [2]
