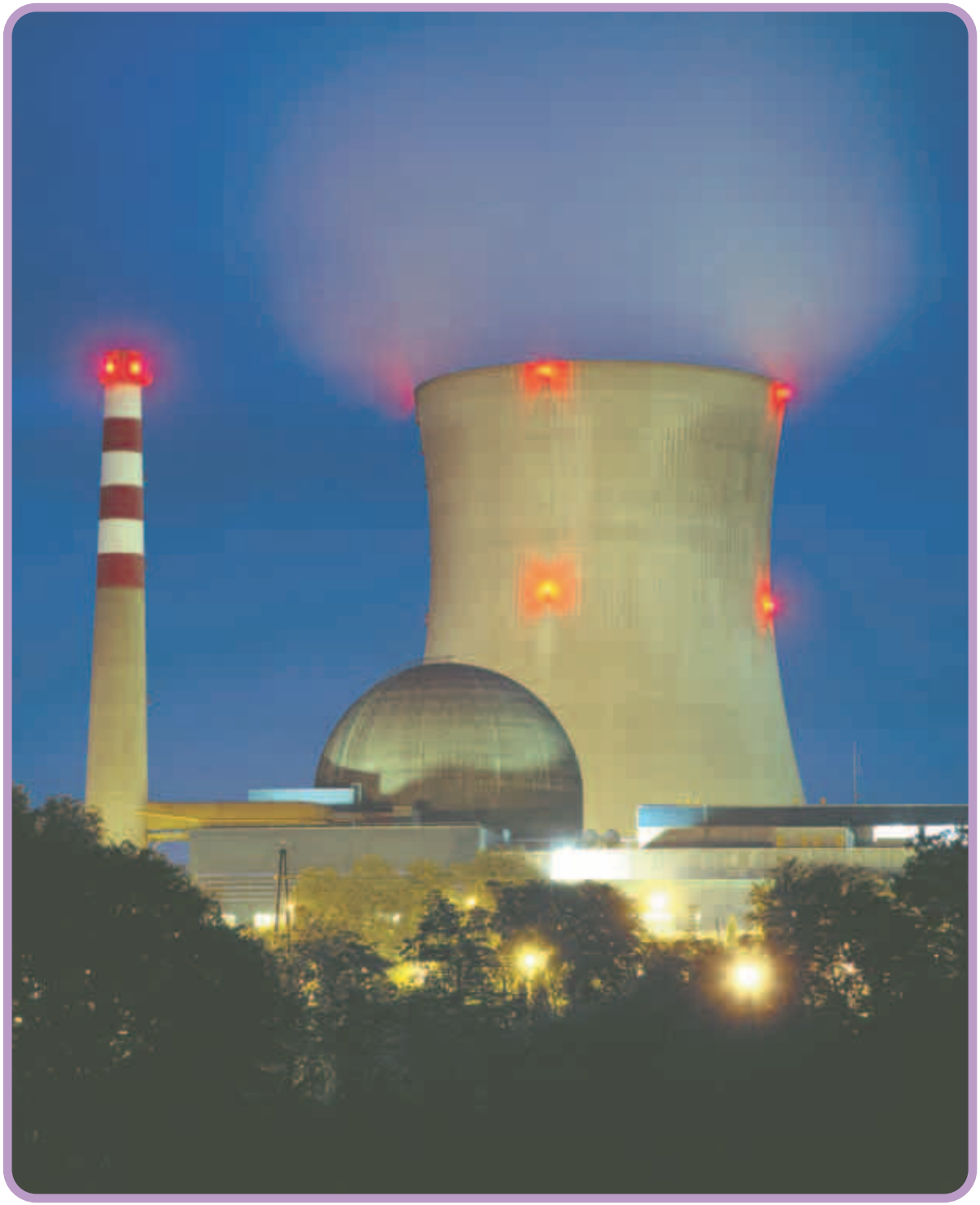

Poo Power or Nuclear Power?

Fossil fuels are running out. How will Britain generate enough electricity in 2014?

Option 1

- build 20 enormous nuclear power stations

Or

Option 2

- build thousands of small renewable energy electrical generators

You Decide!

Then advise the government which option is best. Explain your decision on the template.

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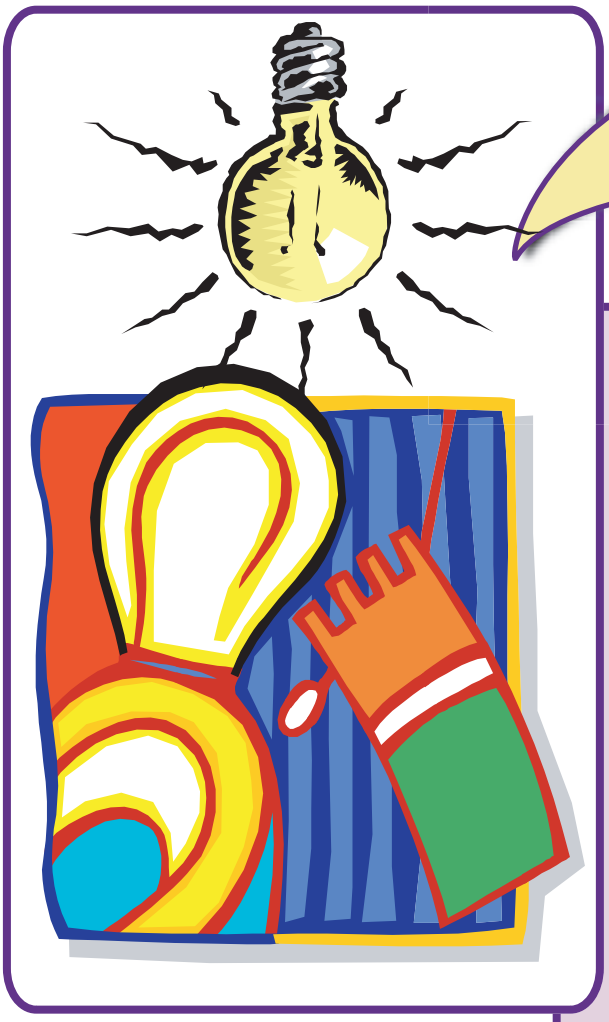
Poo Power – energy for the future?



'The waste you flush down the toilet could one day power the lights in your home' ... say American scientists

How it works

- **Microbial fuel cells** generate electricity and break down harmful organic matter in sewage at the same time.
- Fuel cells contain millions of **bacteria** feeding on the **undigested food** in sewage. The bacteria break down the food with **enzymes.** This makes **electrically charged particles.** These electrically charged particles power an **electric circuit** in the fuel cell.

Chemical energy in sewage → **electrical energy in fuel cell** + **heat energy (wasted)**

Good points:

Environmentally friendly!

- Could generate useful amounts of electricity. (But we'd need other renewable energy sources like wind power, solar cells and rubbish)
- Selling the electricity from microbial fuel cells could make sewage treatment cheaper
- Does not make smoke or greenhouse gases.

Bad points:

Lots of poo, tiny fuel cell!

- It doesn't smell good!
- It needs the poo from 100,000 people to generate 51 kW of electricity – enough for 500 light bulbs!

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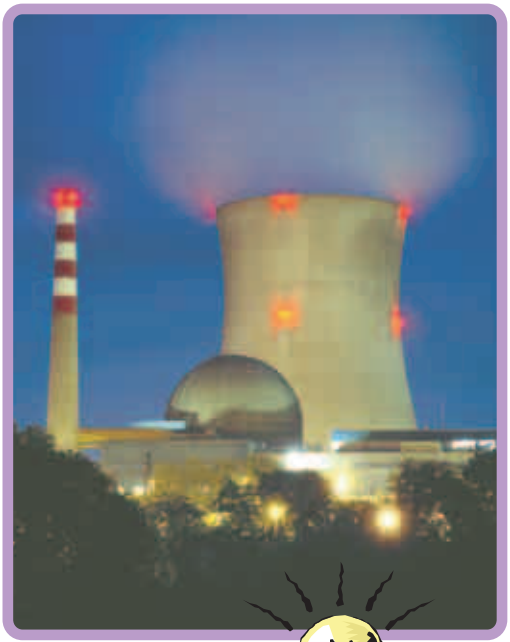
Nuclear Power – clean fuel for ever?



How it works

- In nuclear fuels, radioactive uranium atoms **store** energy. In a nuclear power station, the radioactive atoms **decay** and give out **heat energy**.
- The heat energy heats up water to make **steam.** The steam turns a **generator.** This makes an **electric current** flow.

Stored energy in uranium → **heat energy in water / steam** → **kinetic energy in generator** → **electrical energy**

Heat energy is wasted at every stage

Good points:

- Does not make smoke or greenhouse gases
- One power station generates 500,000kW – enough for 5 million light bulbs.

Bad points:

- Many people could die in a nuclear power station accident
- Radioactive chemicals increase your chance of getting cancer
- The waste from nuclear power stations stays radioactive for hundreds of years. It is dangerous to store.

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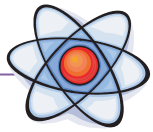
Scientific advice to the government from:



(we have circled the best option below)

Option 1

- build 20 enormous nuclear power stations

Option 2

- build thousands of small renewable energy electrical generators, including microbial fuel cells (poo power generators)

We advise you to choose this option because:

The problems with the option we did not choose are:

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