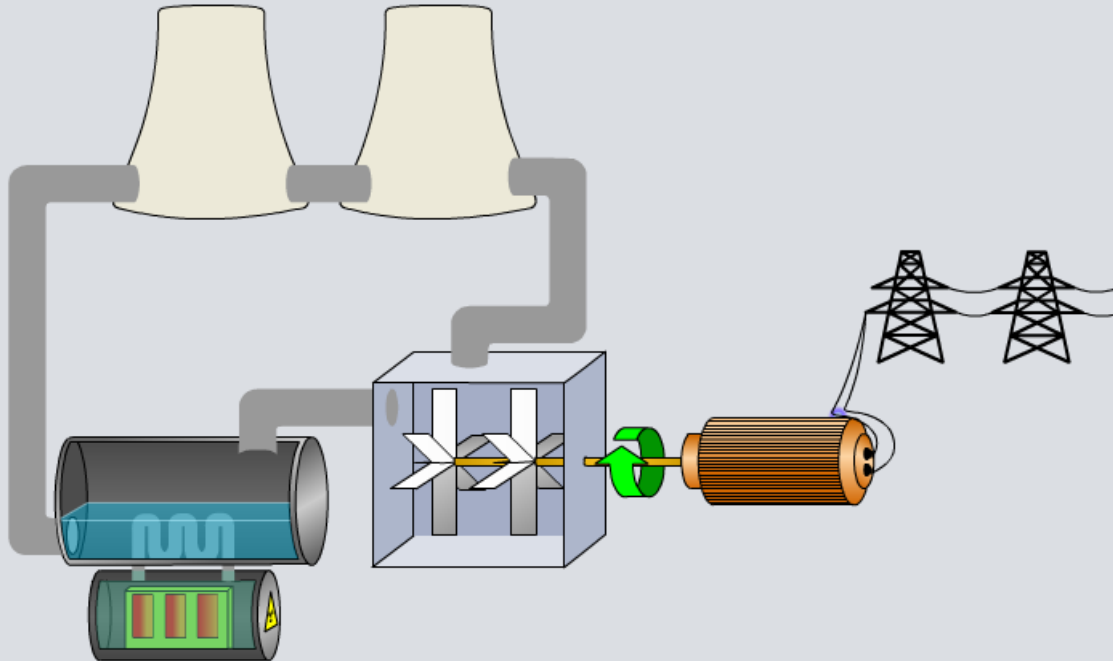
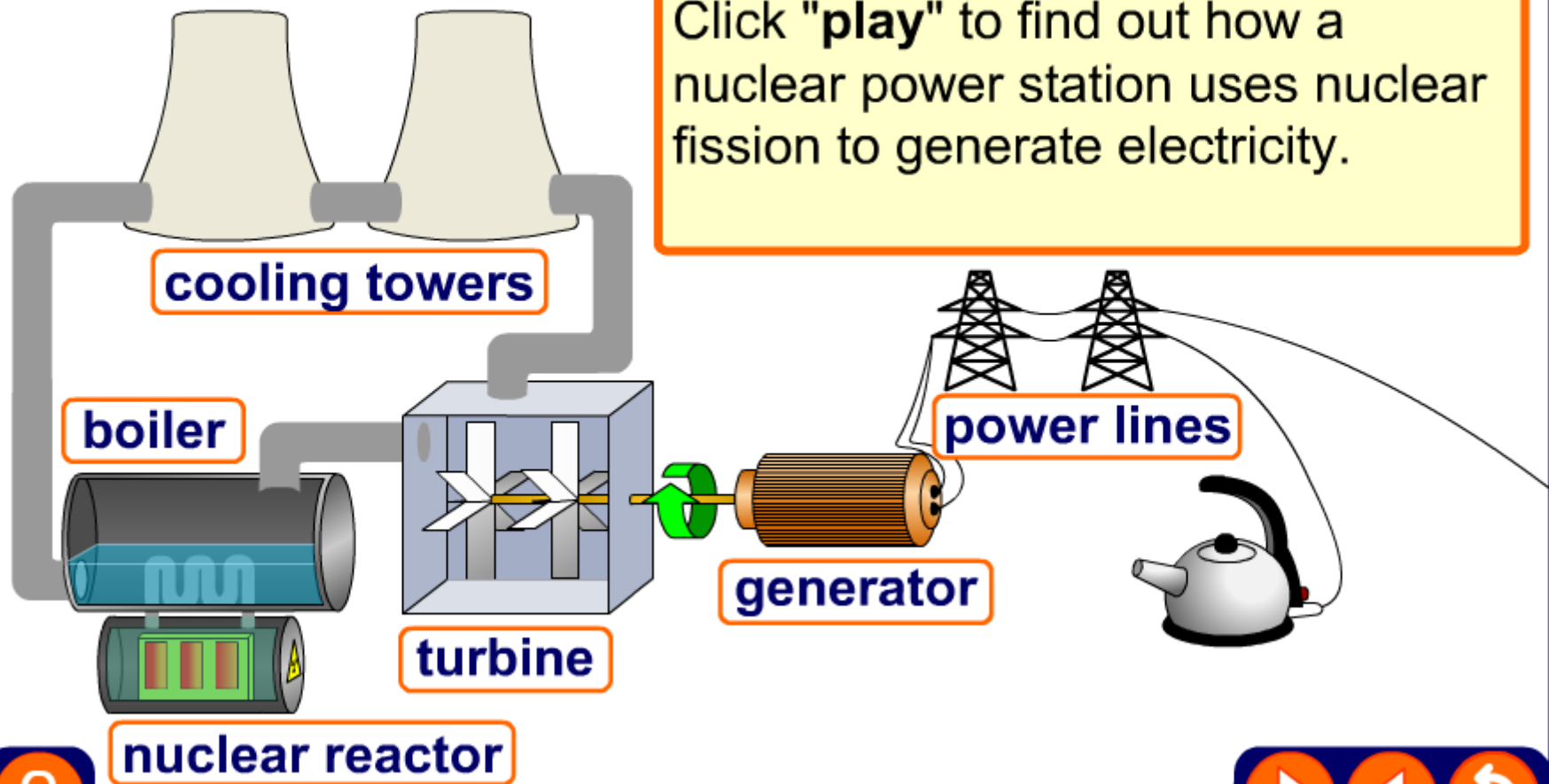


Nuclear Waste



How is fission used in a nuclear power station?

Click "play" to find out how a nuclear power station uses nuclear fission to generate electricity.



What happens to the daughter nuclei?

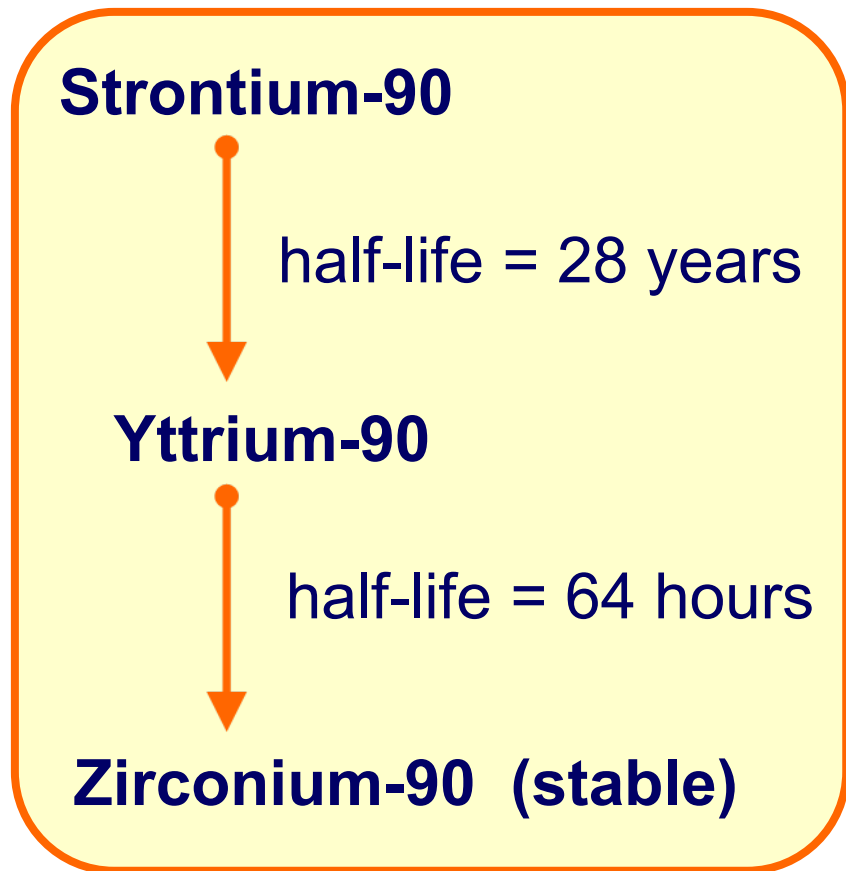
Some of the daughter nuclei produced during nuclear fission are stable isotopes, but many are unstable and radioactive.

An example of an unstable daughter nucleus produced by nuclear fission is strontium-90.

Unstable daughter nuclei will decay into other radioactive isotopes.

The decay process continues until a stable isotope is formed.

This is called a **decay series**.



Why do fuel rods have to be replaced?

Eventually, the uranium-235 in fuel rods is used up and they have to be replaced.

The spent fuel rods contain fission products, many of which are radioactive. Some waste isotopes are short lived, while others will remain radioactive for thousands of years.



Plutonium-239 is formed when uranium-238 is bombarded by neutrons. This highly toxic material can be used as a nuclear fuel and to make nuclear weapons.

Other significant waste isotopes include strontium-90 and iodine-131, which are easily absorbed by the body.

Why does nuclear waste have to be carefully controlled?

How is nuclear waste dealt with?

Spent fuel rods are sent to a reprocessing plant to recover any usable uranium and plutonium.

Many of the isotopes in the remaining waste have no practical purpose and are too dangerous to be released to the environment.

Strict regulations are followed when handling and storing nuclear waste.

Some waste can be stored in cement inside reinforced steel drums.

Long-term storage of nuclear waste is a major problem. Why is it so difficult to find suitable sites?

