

2.7: Types of radiation

Nucleon number

- A
- the number of protons and neutrons in an atomic nucleus

Proton number

- Z
- the number of protons in an atomic nucleus

Isotopes

- elements that have equal numbers of protons but differing numbers of neutrons in their nuclei

Radioactive emissions

- arise from unstable atomic nuclei because of an imbalance between the numbers of protons and neutrons

Waste materials from nuclear power stations and nuclear medicine

- radioactive
- (some) will remain radioactive for thousands of years, due to long half-lives
- require safe disposal, but only time can reduce the radiation emitted, so waste must be stored

Methods of storage/disposal of nuclear waste

- low-level radioactivity: in drums surrounded by concrete; in clay-lined landfill sites
- intermediate-level radioactivity: mixed with concrete and put in a stainless-steel drum in a purpose-built store
- high-level radioactivity: underwater in large pools for 20 years, then placed in storage casks in purpose-built underground stored where air can circulate to remove the heat produced