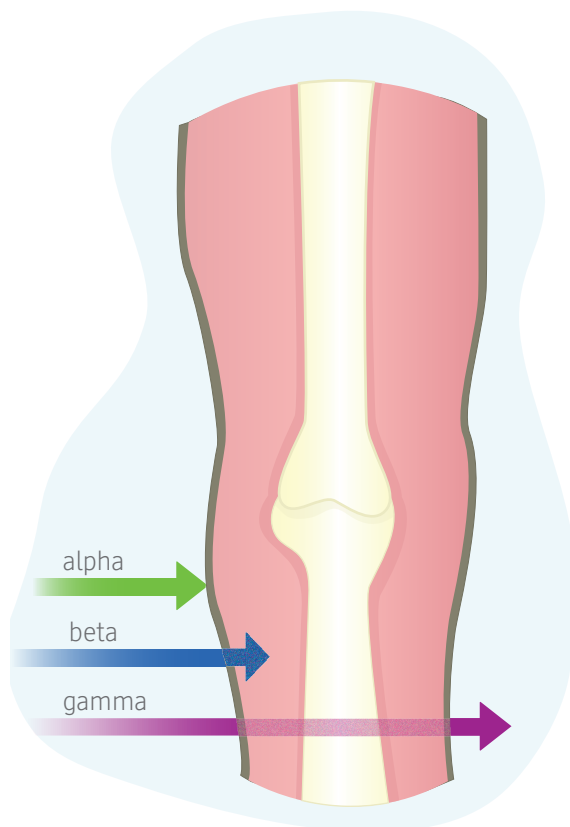
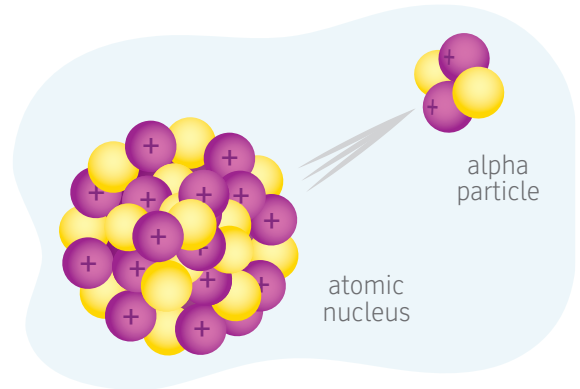


WHAT IS ALPHA (α) RADIATION?

Alpha (α) particles are highly energetic particles emitted from atomic nuclei during radioactive decay.

Some properties of these α particles include:

- The α particle is a helium (He) nucleus consisting of two protons and two neutrons.
- Compared with other types of ionising radiation, they are **very heavy**: the α particle is about 7,000 times heavier than a beta (β) particle.
- The α particle is **charged** and can therefore be strongly ionising.



Cross section of a human leg, demonstrating the penetration depth of radiation types: alpha radiation is stopped by human skin, beta radiation penetrates into the skin and gamma radiation penetrates the body entirely.

- The α particle interacts strongly with matter. Because of this, it **does not move very far** before it is stopped – it can move no more than a few centimetres in air.
- The α particle is easily stopped by a sheet of paper or by the outer layer of human skin.
- Because the α particle does not penetrate human skin, it is **harmless externally**.
- Because of its large mass and charge, the α particle is a **significant hazard internally**, i.e. when inhaled or ingested. The lung is a sensitive organ and is easily damaged by highly-ionising α particles.
- The α particle is present in cigarette smoke. Because the smoke is inhaled into the lung it presents a radiation hazard in addition to the damage associated with tar clogging the lung.
- α radiation cannot make a target radioactive.
- The α particle is emitted from heavy radioactive nuclei such as those of uranium, thorium, radium, radon and plutonium.