

- Radioactive elements are used in medicine both as tracers and to treat diseases such as cancer. Describe what the ideal half-life of an element is for each application, and state the reasons for your choices.

As a tracer, the element should ideally have a short half-life, of around a few hours, long enough for it to be produced, administered and imaged, but short enough for it to decay quickly so that it stops being radioactive in the body of the patient.

A longer half-life would be more suited for a topical treatment of cancer, to impose radiation to the affected area with a higher activity for a longer time.