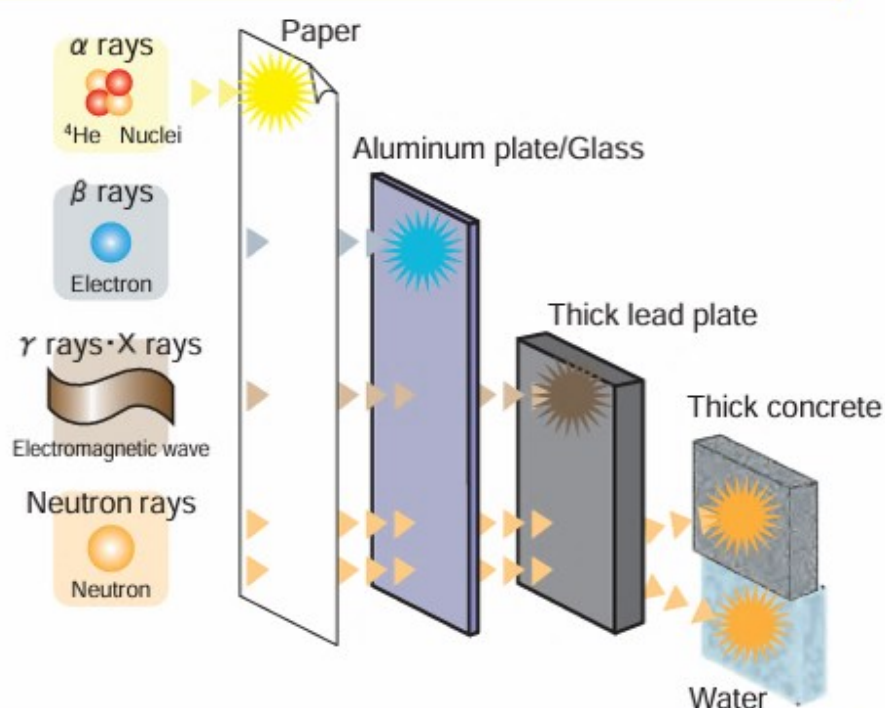


Radioactivity and radiation

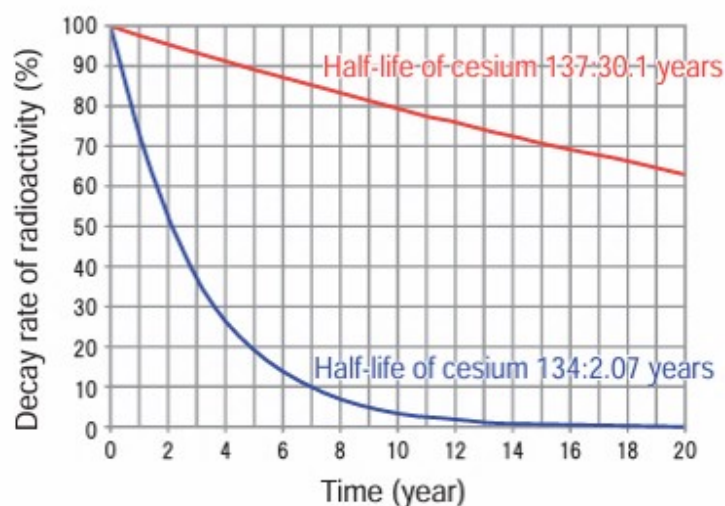
Types of radiation

Radiation types include α (alpha) rays, β (beta) rays, γ (gamma) rays, and neutron rays. X-rays that we use in health examinations are also radiation, and are a type of electromagnetic wave similar to γ rays. These types of radiation each have different penetrating power (ability to penetrate matter), for instance, α rays can be stopped with a sheet of paper, while neutron rays penetrate thick lead plates, but can be stopped by water or thick concrete.



Half-life

The radioactivity of radioactive materials becomes weaker over time. The time needed for the amount of radioactivity to decrease to the point where it is only half as strong as it was originally, is called its half-life. The half-life depends on the radioactive material; it can be as short as 1/1,000,000 of a second, or as long as 10 billion years. For example, the decay rate of cesium, which was released during the accident at the Fukushima Daiichi nuclear power station, is shown in the figure.



Units of radiation and radioactivity

Humans cannot directly feel radiation or radioactivity, but its strength and amount can be measured.

[Units of radiation dose and radioactivity]

	Unit	Symbol	Explanation
Unit of radiation dose	Gray	Gy	Unit of energy that is absorbed when radiation hits a material
	Sievert	Sv	Unit of effect when a human body is exposed to radiation
Unit of radioactivity	Becquerel	Bq	Unit of radioactivity of a radioactive material, which is the number of nuclei that cause radioactive decay (nuclei that emit radiation and are then destroyed) in one second