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Science

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Why materials are radioactive

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Penetrating properties of radiation

Radiation can be absorbed by substances in its path. Alpha radiation travels only a few centimetres in air, beta travels tens of centimetres, while gamma radiation travels many metres. All types of radiation become less intense the further they are from the radioactive material, as the particles or rays become more spread out.

The thicker the substance, the more the radiation is absorbed. But the three types of radiation penetrate materials in different ways.

Types of Radiation

Alpha radiation

Alpha radiation is **the least penetrating**. It can be stopped, or absorbed, by just a sheet of paper.

Beta radiation

Beta radiation is **able to penetrate air and paper**. It can be stopped by a thin sheet of aluminium.

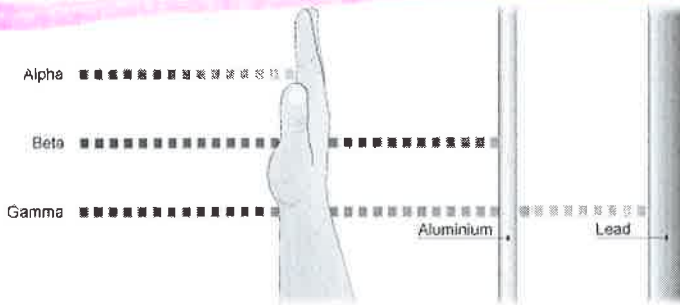
Gamma radiation

Gamma radiation is **the most penetrating**. Even small levels can penetrate air, paper or thin metal. Higher levels can only be stopped by many centimetres of lead, or many metres of concrete.

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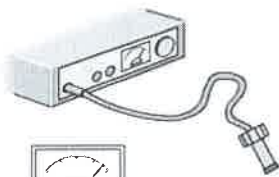
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Penetrative properties of different types of radiation

Check your understanding by having a go at this animation. Click on each image of the rock to discover the reading on the radiation metre. Use the readings to confirm that the rock gives out beta radiation.



Rock: Very high reading



radioactive rock



wrapped in paper



wrapped in aluminium foil

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