



In external exposure,  $\alpha$ -particles having weak penetrating power stop at the epidermis and therefore do not produce any effects, but if a large amount of radioactive materials that emit  $\beta$ -particles adheres to the surface of the body for an extended period of time, they will affect the skin's basal cells and hair-root cells that have high sensitivity to radiation, possibly causing skin erythema that is characterized by reddening of the skin, hair loss, etc. However, such exposure is extremely rare, and the major problems with external exposure are associated with radioactive materials emitting  $\gamma$ -rays that affect the inside of the body. (Related to p.21 of Vol. 1, "Penetrating Power of Radiation within the Body," and p.22 of Vol. 1, "Penetrating Power and Range of Effects on the Human Body")

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