



While radiation includes ionizing radiation and nonionizing radiation, radiation usually means ionizing radiation.

Source: Partially revised "Ionizing Radiation" in the Encyclopedia for Public Acceptance of Atomic Energy Accessible on the Internet, ATOMICA

Radiation generally means ionizing radiation. Ionizing radiation, which has the ability to ionize atoms that make up a substance (separate the atoms into positively charged ions and negatively charged electrons), is categorized into particle beams and electromagnetic waves.

Particle beams include  $\alpha$  (alpha)-particles,  $\beta$  (beta)-particles, neutron beams, etc. (p.13 of Vol. 1, "Where does Radiation Come from?"). Particle beams include charged (ionized) particle beams and uncharged particle beams.  $\gamma$  (gamma)-rays and X-rays are types of electromagnetic waves.

Some forms of electromagnetic waves, such as electric waves, infrared rays, and visible rays, do not cause ionization, and they are called nonionizing radiation. Ultraviolet rays are generally categorized as nonionizing radiation although some ultraviolet rays do cause ionization (p.15 of Vol. 1, "Types of Ionizing Radiation").

(Related to p.19 of Vol. 1, "Types of Radiation and Biological Effects," and p.20 of Vol. 1, "Penetrating Power of Radiation")

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