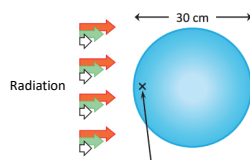
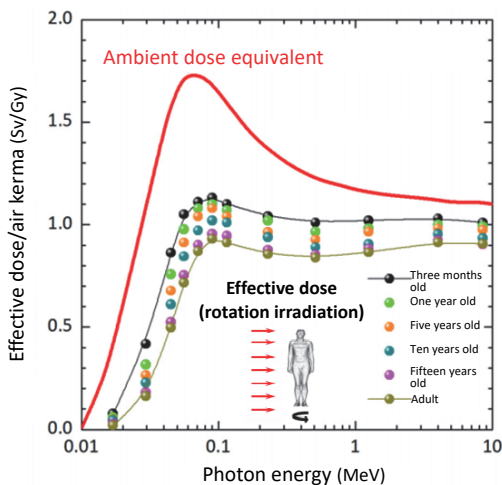


## Difference between Values of Effective Dose and Dose Equivalent



The ambient dose equivalent measured with a survey meter is defined as the dose equivalent at a depth of 1 cm from the surface of an ICRU sphere that is 30 cm in diameter. The ambient dose equivalent is also called 1 cm dose equivalent.

Extract from the 9th meeting of the Atomic Energy Commission of Japan in 2012 (a report by Akira Endo of JAEA)

The ambient dose equivalent measured with a survey meter is set to always indicate a larger value than the effective dose.

This is also the case for a personal dosimeter when measuring radiation incident only from the front. However, in a setting where a personal dosimeter is worn on the body and radiation sources are evenly distributed, measured value will be close to the value of "effective dose" because of the self-shielding effect of the human back, etc.

The graph above shows differences between effective dose (including the self-shielding effect of the back, etc. in the case of even irradiation by rotation) and ambient dose equivalent to the energy of incident  $\gamma$ -rays. While the degree of self-shielding slightly varies depending on differences in physique due to age, the value measured with a survey meter for Cs-137  $\gamma$ -rays at 662 keV is shown to be about 30% larger than the effective dose for adults and the value measured with a personal dosimeter (personal dose equivalent). (Related to p.40 of Vol. 1, "Dose Equivalents: Measurable Operational Quantities for Deriving Effective Doses")

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