Dose Measurement and Calculation

Exposure Doses from Foods (Example of Calculation)

(e.g.) An adult consumed 0.5 kg of foods containing **100 Bq/kg** of **Cesium-137**

$$100 \text{ (Bq/kg)} \times 0.5 \text{ (kg)} \times \boxed{0.013} \text{ (μSv/Bq)} = 0.65 \text{ μSv}$$
$$= 0.00065 \text{ mSv}$$
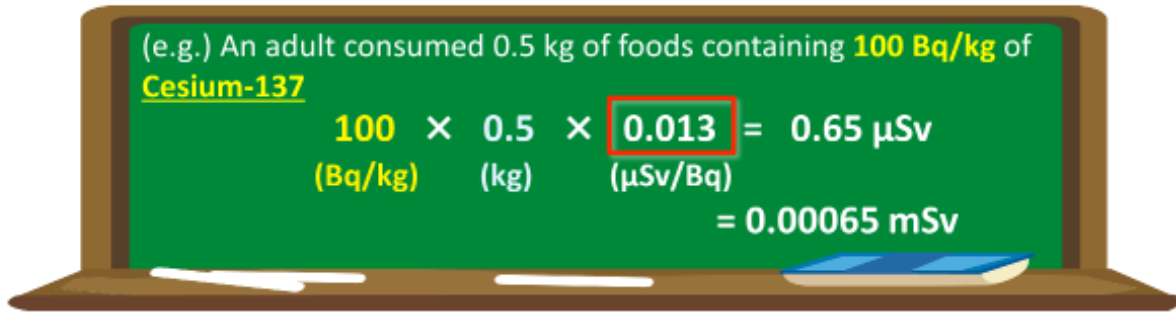
Committed effective dose coefficients (μSv/Bq)

	Iodine-131	Cesium-137
Three months old	0.18	0.021
One year old	0.18	0.012
Five years old	0.10	0.0096
Adult	0.022	0.013

Bq: becquerels; μSv: microsieverts; mSv: millisieverts

Source: Prepared based on ICRP Publication 119, Compendium of Dose Coefficients based on ICRP Publication 60, 2012, International Commission on Radiological Protection (ICRP)

For example, the dose that an adult who consumed foods containing Cesium-137 will receive is calculated here.

Suppose the person has consumed 0.5 kg of foods containing 100 Bq of Cesium-137 per 1 kg.

The amount of Cesium-137 actually consumed is 50 Bq. This value is multiplied by an effective dose coefficient to calculate committed effective dose (p.56 of Vol. 1, "Committed Effective Doses").

Committed effective dose coefficients are defined in detail for each type of radioactive material, each intake route (inhalation or ingestion), and each age group (p.57 of Vol. 1, "Conversion Factors to Effective Doses").

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