

# Difference in Radiosensitivity by Age

## Children are not small adults.

	Committed effective dose coefficients for I-131*1 (mSv/Bq)	Committed effective doses when having taken in 100 Bq of I-131 (mSv)	Equivalent doses to the thyroid when having taken in 100 Bq of I-131*2 (mSv)
<b>3 month-old infants</b>	<b>0.18</b>	<b>18</b>	<b>450</b>
<b>1 year-old children</b>	<b>0.18</b>	<b>18</b>	<b>450</b>
<b>5 year-old children</b>	<b>0.10</b>	<b>10</b>	<b>250</b>
<b>Adults</b>	<b>0.022</b>	<b>2.2</b>	<b>55</b>

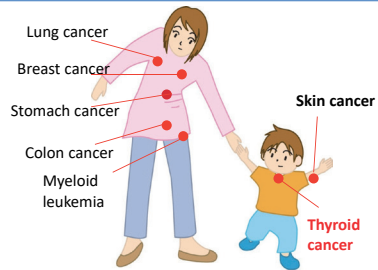
\*1: Committed effective dose coefficients are larger for children due to difference in metabolism and physical constitution.

\*2: Calculated using the tissue weighting factor of 0.04 for the thyroid

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

**Risks of thyroid cancer and skin cancer are higher for children than for adults.**

mSv/Bq: millisieverts/becquerel



In the case of adults, bone marrow, colon, mammary gland, lungs and stomach easily develop cancer due to radiation exposure, while it has become clear that risks of developing thyroid cancer and skin cancer are also high in the case of children.

In particular, children's thyroids are more sensitive to radiation and committed effective doses per unit intake (Bq) are much larger than adults. Therefore, the exposure dose to the thyroids of 1-year-old children is taken into account as the standard when considering radiological protection measures in an emergency. Additionally, much larger values are adopted as children's committed effective dose coefficients per unit intake (Bq) than those for adults.

(Related to p.114 of Vol. 1, "Relationship between Ages at the Time of Radiation Exposure and Oncogenic Risks")

Included in this reference material on March 31, 2013

Updated on March 31, 2015