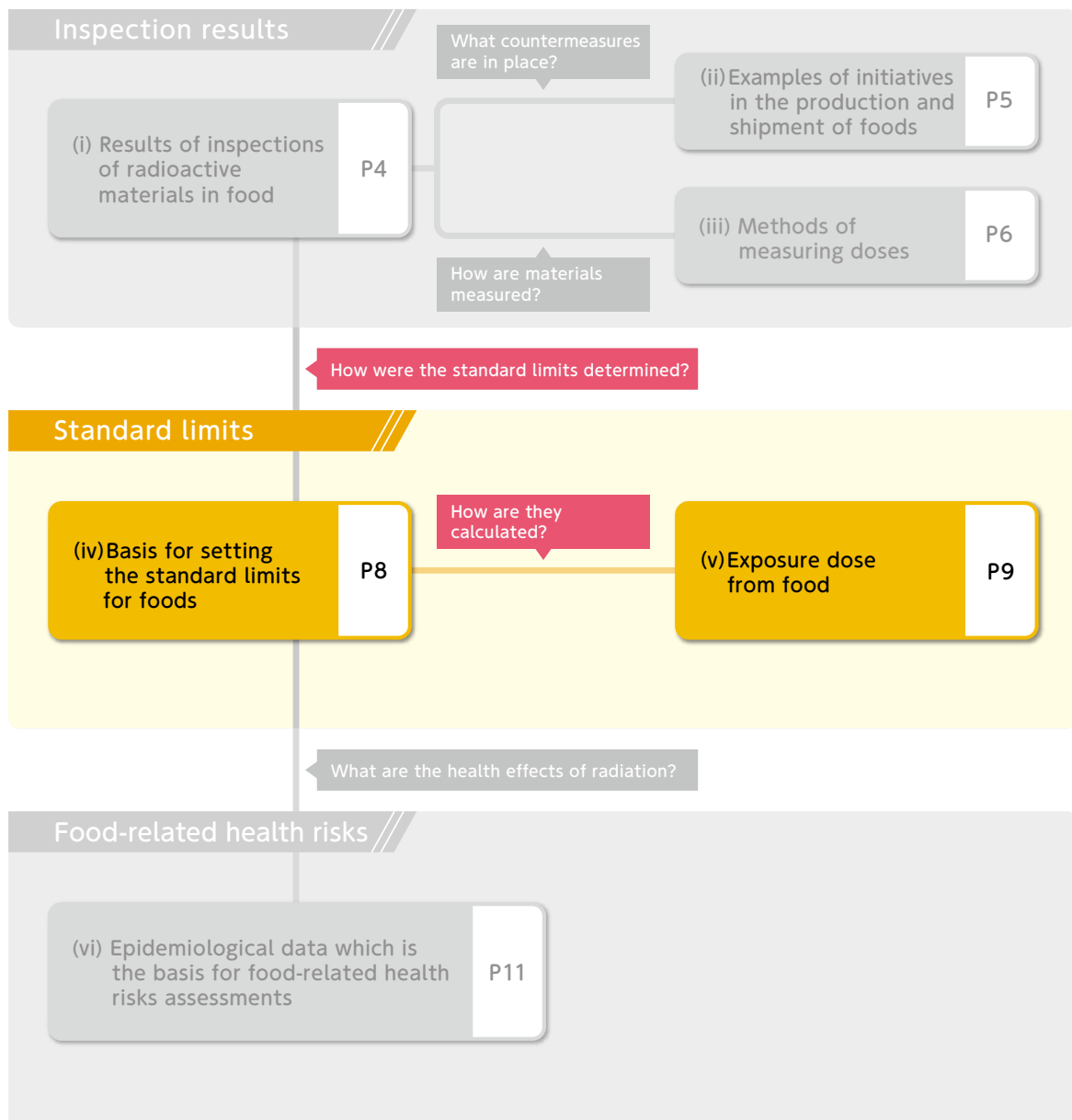




# Theme: Standard limits

In order to ensure safety and consumer peace of mind for food, a standard limit for radioactive materials in foods is established. This section will explain the approach for the establishment of the standard limits selected and also present a calculation example for exposure doses from foods from the perspective of related health risk.



## (iv) Basis for setting the standard limits for foods

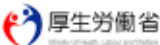
Handling measures are implemented to ensure that food products found to have radioactive cesium concentration in excess of the standard limit in radioactive material inspections do not enter distribution. The present standard limits are based on the idea that the annual radiation dose from foods should not exceed 1 mSv.

### ● Present standard limits concerning radioactive cesium\*

Present standard limits concerning radioactive cesium in food are as follows.

Category	General foods	Infant foods	Milk	Drinking water	
Standard limit	100	50	50	10	(Unit: Bq/kg)

\*The effects of other materials such as strontium-90 and plutonium were also considered when setting the standard limits.

Prepared based on the Ministry of Health, Labour and Welfare's website, "Measures for Radioactive Materials in Foods" 

For more information about standard limits, see page 53 of Vol. 2, FY2022 edition.

### ● The Idea of the Standard Limits

The annual additional dose limit for radiation is 1 mSv. How was this value determined?

**Why were the standard limits set based on the annual permissible dose of 1 mSv?**

**(i) They are in line with the international indicator based on scientific knowledge.**

**The Codex Alimentarius Commission, which establishes international specifications for foods, has set indicators so that the annual dose does not exceed 1 mSv.**

Note) The International Commission on Radiological Protection (ICRP) considers that stricter requirements below 1 mSv/year would not achieve any significant additional dose reduction. Therefore, based on this, the Codex Alimentarius Commission specifies indicators.

**(ii) They are intended to reduce radiation exposure as low as reasonably achievable.**

**Radiation monitoring surveys have shown considerable decreases over time in radioactivity concentrations measured in foods.**

Prepared based on the Ministry of Health, Labour and Welfare's website, "Measures for Radioactive Materials in Foods" 

For more information about the idea of the standard limits, see page 57 of Vol. 2, FY2022 edition.

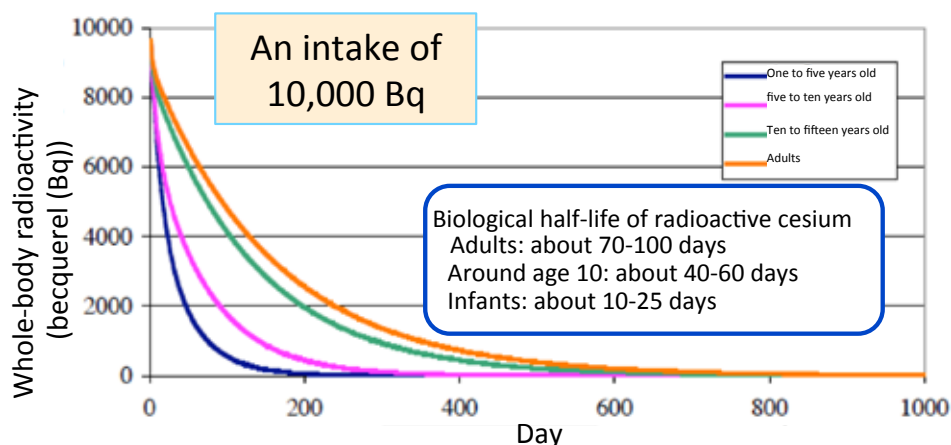
## (v) Exposure dose from food

Internal exposure dose is calculated based on intake volume of foods containing radioactive materials.

### ● The Idea of Internal Exposure

Radioactive materials remain in the body for a certain period of time after being taken into the body. In the meantime, the body will be continuously exposed to radiation. Thus, the total amount of radiation that a person will be exposed to into the future is calculated as dose due to internal exposure based on a single intake of radioactive materials.

Any radioactive materials taken into the body will decrease over time. For adults, the time required for radioactive cesium that enters the body to reduce to half is said to be about 70 -100 days.



Source: Modified from a material released for the Japan Society of Radiation Safety Management Symposium in Miyazaki (June 29, 2012)

For more information about the idea of internal exposure, see pages 56 and 62 of Vol. 1, FY2022 edition.

### ● Exposure Doses from Foods (Example of Calculation)

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

$$100 \text{ (Bq/kg)} \times 0.5 \text{ (kg)} \times 0.013 \text{ (}\mu\text{Sv/Bq)} = 0.65 \text{ }\mu\text{Sv} = 0.00065 \text{ mSv}$$

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

The 0.013 in the red box is the coefficient for converting from Bq to Sv defined by the International Commission on Radiological Protection (ICRP). When calculating internal exposure dose, consider the committed effective dose. Committed effective dose coefficients are defined in detail for each type of radioactive material, each intake route (inhalation or ingestion), and each age group. Based on market basket surveys, annual radiation doses received from radioactive cesium in foods were estimated to be 0.0005 to 0.0011 mSv, 1% or lower of the annual permissible dose of 1 mSv/y, based on which the standard limits were established. Thus, annual radiation doses were confirmed to be extremely small.

For more information about these calculations, see page 58 of Vol. 1, FY2022 edition.