CAA
Consumer Affairs Agency
Government of Japan

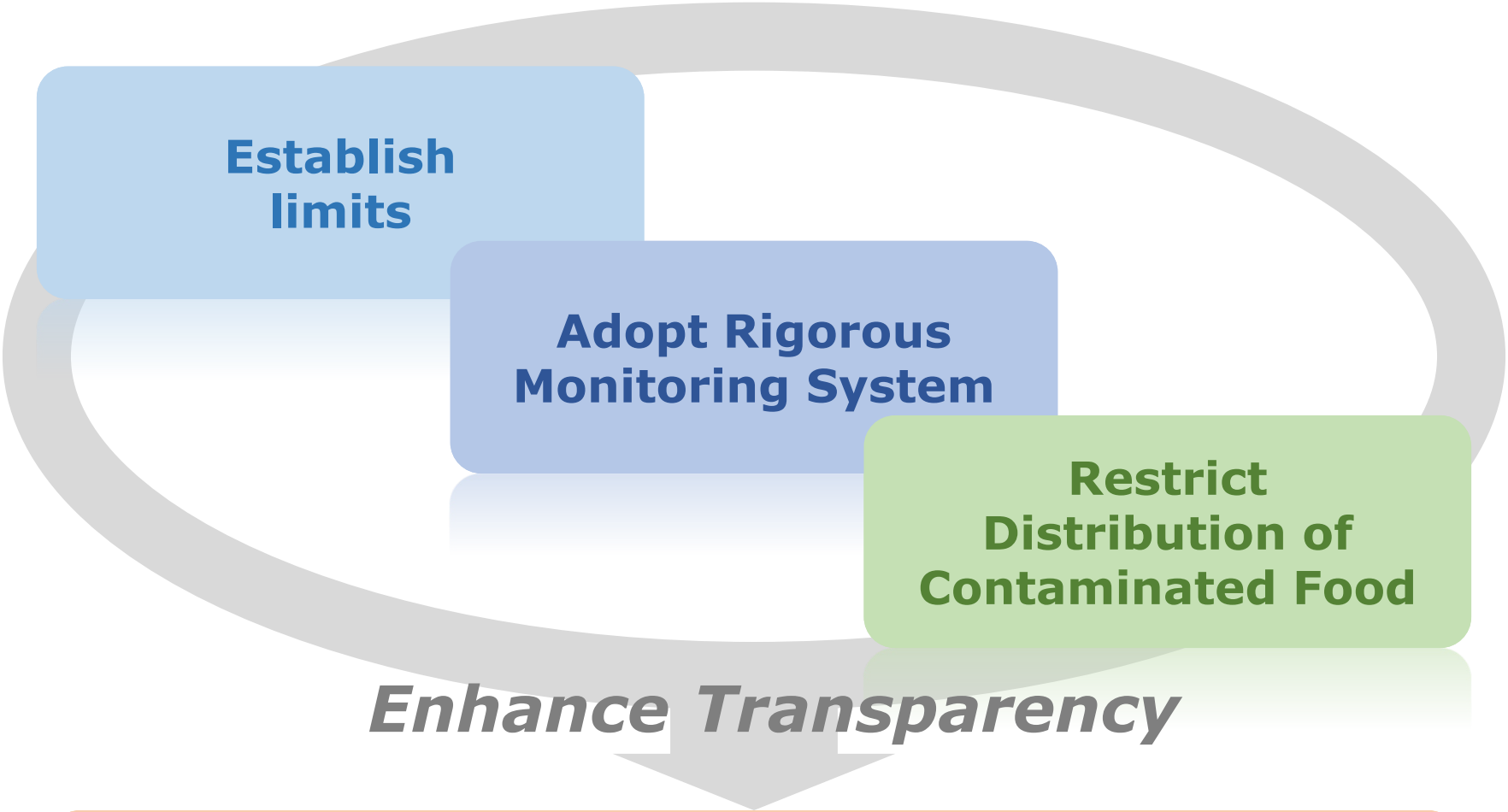
Radioactive materials in foods

- current situation and protective measures -

Food Safety Standards and Evaluation Division

Consumer Affairs Agency

MHLW's & CAA's Four Actions for Safety



Control of radioactive materials in foods

Establish limits for radioactive materials in foods

The indicator values given by the Nuclear Safety Commission were set as the provisional regulation values. (March 17, 2011 - March 31, 2012)

The present limits for radioactive materials in foods took effect. (April 1, 2012 -)

* Please refer to the Ministry of Health, Labour and Welfare website for inspection and shipping restrictions below.
https://www.mhlw.go.jp/shinsai_jouhou/shokuhin.html

Monitor radioactive materials in foods

The monitoring is conducted by the local governments around the 17 prefectures. (March 18, 2011 -)

The Nuclear Emergency Response Headquarters established guidelines on the local governments' formulation of monitoring plans for radioactive materials in foods. (April 4, 2011)

Recall and dispose of foods containing radioactive materials above the limits

All the articles in a lot in which the levels are exceeded are recalled or disposed of.

Restrict the distribution of foods **[Nuclear Emergency Response Headquarters]**

Distribution is restricted on a prefecture basis (or a smaller area basis in a prefecture), judging from the spreading of places where radioactive materials above the limits are detected as a result of inspections. (March 21, 2011-)

Lift restrictions **[Nuclear Emergency Response Headquarters]**

Every testing result from samples collected within the past one month from at least three different locations in a municipality must be below the corresponding limits.

Concept of the Japanese limits

1 mSv /year

Standard of radioactive cesium

Category	Limit
Drinking water	10
Milk	50
General Foods	100
Infant Foods	50

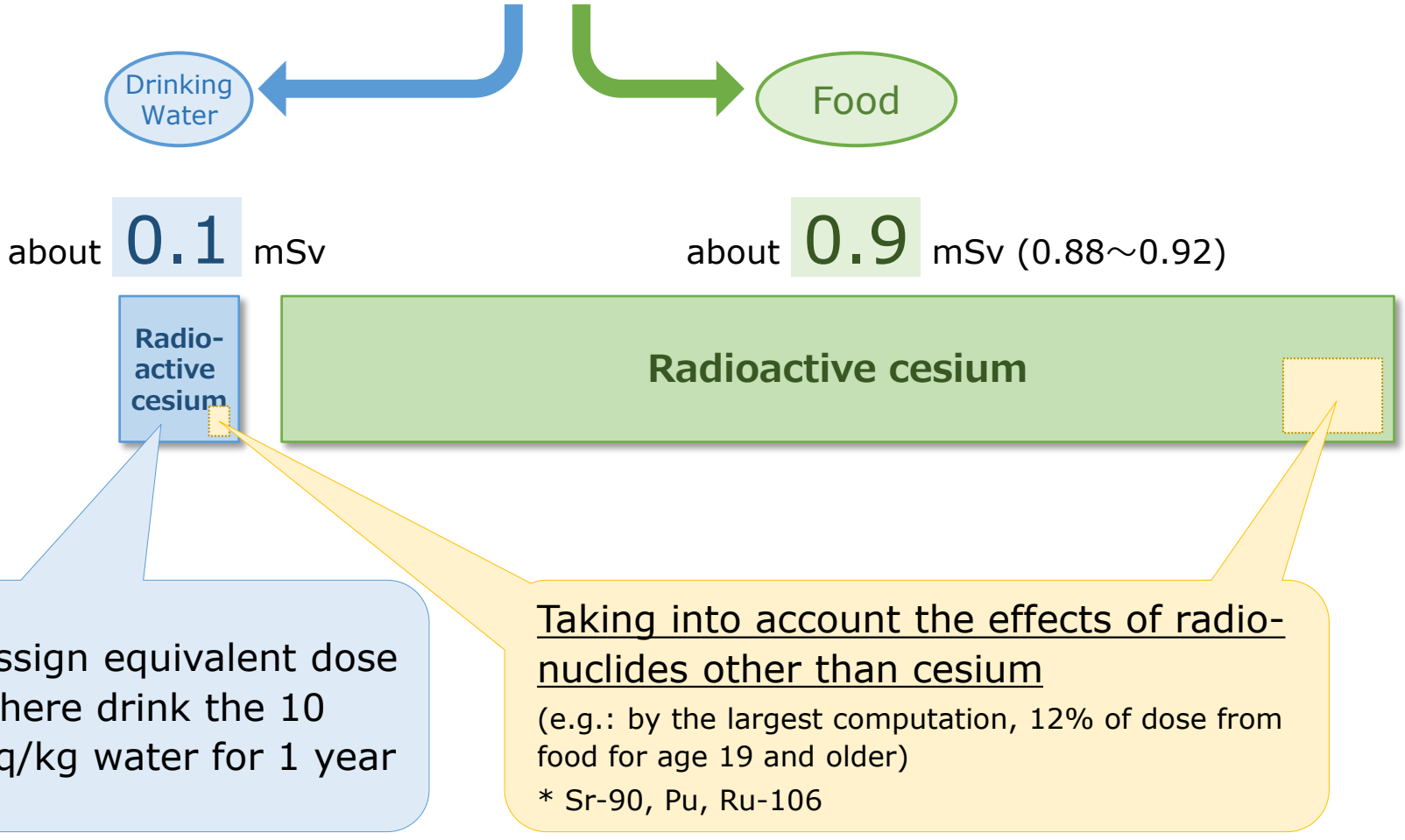
(Bq/kg)

- The limits are based on 1 mSv in a year consistent with an intervention exemption level adopted by codex
- The limits are based on more conservative assumption than codex
  - Even if as much as 50% of the foods are contaminated at the limit value, effective dose of most vulnerable age group is expected to be below 1 mSv/year (the intervention level), including the exposure to strontium, etc.

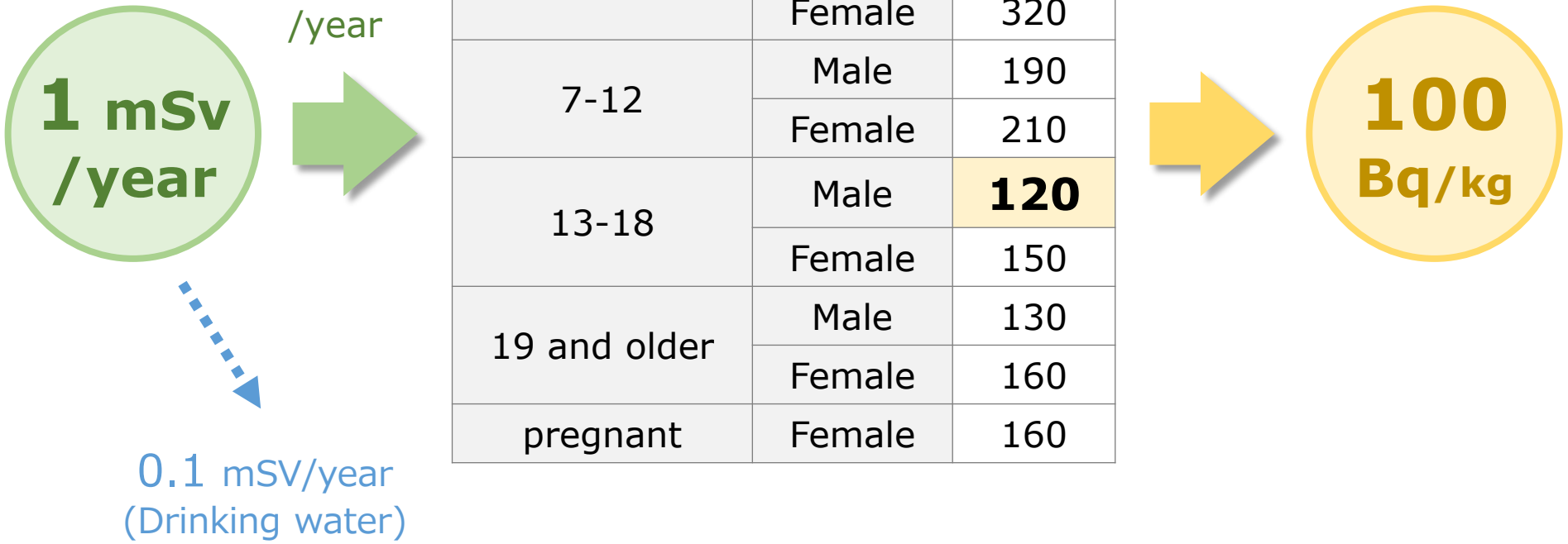
The concept of radionuclides to be regulated

Dose limit of 1 year per person for the standard limits

1 mSv



The Concept of the limit for "General Foods"



Age category	Intake	Limit
under 1	Average	460
1-6	Male	310
	Female	320
7-12	Male	190
	Female	210
13-18	Male	**120**
	Female	150
19 and older	Male	130
	Female	160
pregnant	Female	160

Calculate limit values, taking into consideration the intake and conversion coefficient according to age category.

The concept of radionuclides to be regulated

Standard limits set the radioactive cesium as an indicator

- Targets to be regulated are all radionuclides based on the evaluation of the Nuclear and Industrial Safety Agency as substances emitted by the Fukushima nuclear power plant accident, and whose half-life is over 1 year.

Regulated Radionuclides	Physical Half-life
Cs-134	2.1years
Cs-137	30years
Sr-90	29years
Pu	14years or more
Ru-106	374days

Note: The limits are not established for radioactive Iodine, which has a short half-life (8 days) and has been no longer detected, and for Uranium, whose level is almost the same in the nuclear power plant site as in the natural environment.

- Because radionuclides other than Cs-134 and Cs-137 require a longer time for measurement, the limits for radioactive cesium are established for effective dose of radionuclides (including Sr-90, Ru-106, Pu) not to exceed 1 mSv/year.

The concept of radionuclides to be regulated

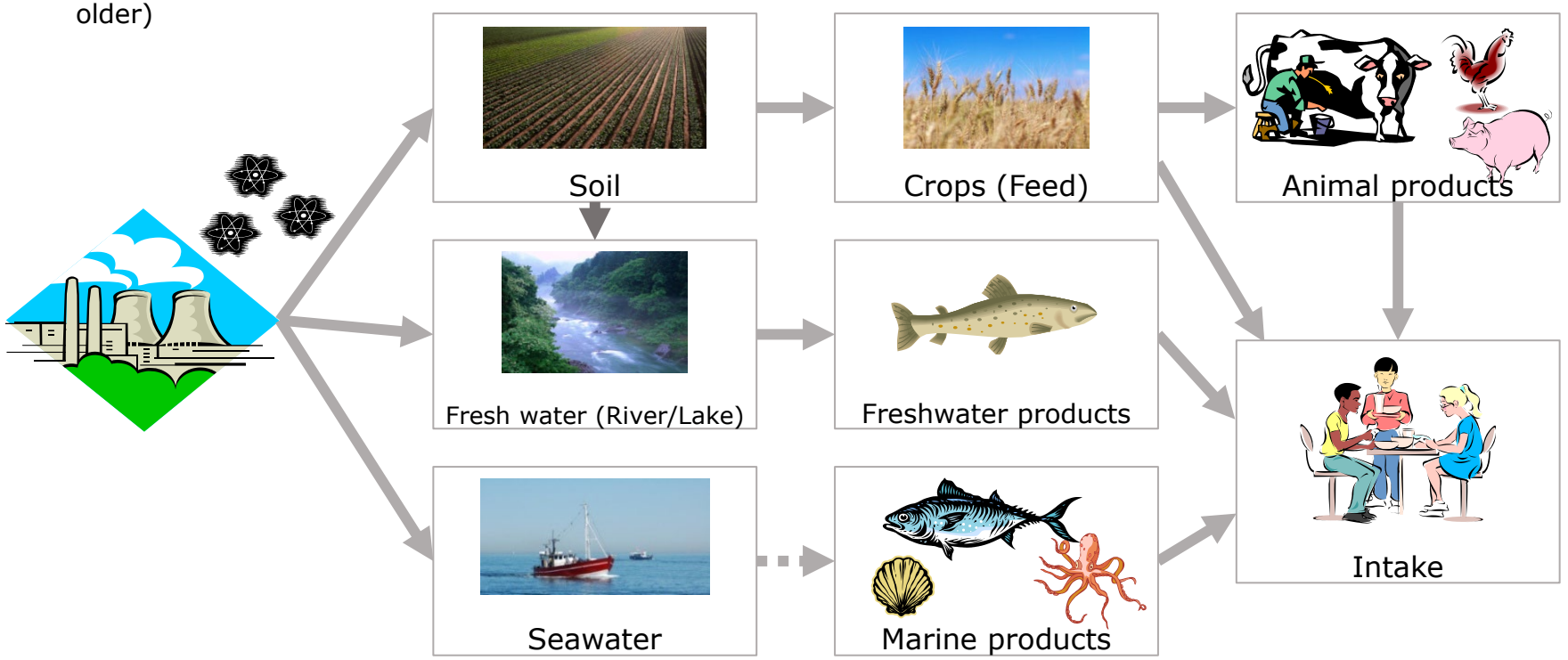
The concept for establishment of the limits

The limits for radioactive cesium are established for effective dose of radionuclides (including Sr-90, Ru-106, Pu) not to exceed 1mSv/year.

Because radionuclides other than Cs-134 and Cs-137 require a longer time for measurement, following procedure is taken to establish the limits.

- Analyze the migration ratio of each radionuclide according to migration pathway, derive the contribution of radioactive cesium according to product and age categories , and establish the limits for radioactive cesium so that the sum of effective doses does not exceed 1 mSv/year.

  e.g.) The contribution of radionuclides other than radioactive cesium is about 12% (in case of people aged 19 and older)



The range of food categories

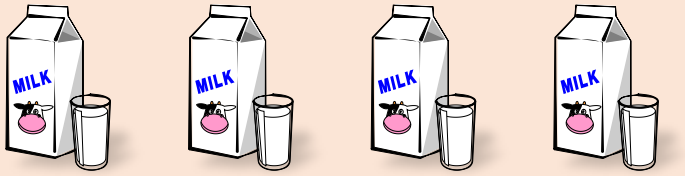
Food category	The reason to establish the limits	The range of foods
Drinking water	1. Water is essential for human life and there is no substitution for water, and its consumption is large. 2. WHO's guidance level for radioactive cesium in drinking water is 10Bq/kg. 3. Strict management is possible for the radionuclides in tap water.	• Drinking water, water used for cooking and tea drinks, which is substitute for water
Infant Foods	• The Food Safety Commission pointed out that "the susceptibility to radiation may be higher in childhood than in adulthood."	• Foods approved to be labeled as "fit for infants" based on Article 43 Paragraph 1 of the Health Promotion Law • Foods and drinks sold as intended for infants
Milk	1. Children consume a lot. 2. Food Safety Commission pointed out that "a susceptibility to radiation may be higher in childhood than in adulthood."	• "Milk" and "milk drinks" refers to products specified in Article 2 Paragraph 1 and 42 of the Order on Milk and Milk Products Concerning Compositional Standards, Etc.
General Foods	For the following reasons, foods other than given above are categorized as "General Foods" 1. It is possible to make the influence of individual differences in eating habits (deviation of the foods to be consumed) minimal. 2. Regulation intelligible for people 3. Consistency with international views, such as these of Codex Alimentarius Commission	• Foods other than given above

The range of “Milk” and limits for “Milk” and “Infant Foods”

Foods included in “Milk” category

- The “Milk” category covers milk and milk drinks.
- Milk drinks are drink products which are made mainly of milk as the main ingredient, and they include those which are recognized by consumers as similar kinds of drinks to milk and processed milk.

Foods included in “Milk” category



Milk　Low-fat milk　processed milk　Milk-based drinks

Foods not included in “Milk” category

Lactic acid bacteria drinks　Yogurt　Cheese

“Milk” refers to products specified in the Order on Milk and Milk Products Concerning Compositional Standards, Etc.

“Milk products” refers to products specified in the Order on Milk and Milk Products Concerning Compositional Standards, Etc.

- Since “Milk” and “Infant foods” are categories provided in consideration for children, the limit for them is established as a level that is not affected even if all of the marketed foods are contaminated.

➡ “50 Bq/kg” which is half of the limit for “General foods”(100Bq/kg) applies to “Milk” and “Infant foods”.

Application of the limits to foods manufactured/processed

Basic Concept

In principle, processed foods are subject to the limit for "General foods".

The limit applies to the various stages of products on a case by case basis, for example, to the finished products or raw materials. For the foods given in 1 and 2 below, the limit applies to products in a ready-to-eat state based on the view of Codex Commission.

1. Dry foods that are intended to be consumed in a reconstituted state, such as dried products of mushrooms, seaweeds, fish & shellfish and vegetables etc.

- The limit for "General foods" applies to raw materials (in a natural state) and reconstituted products.

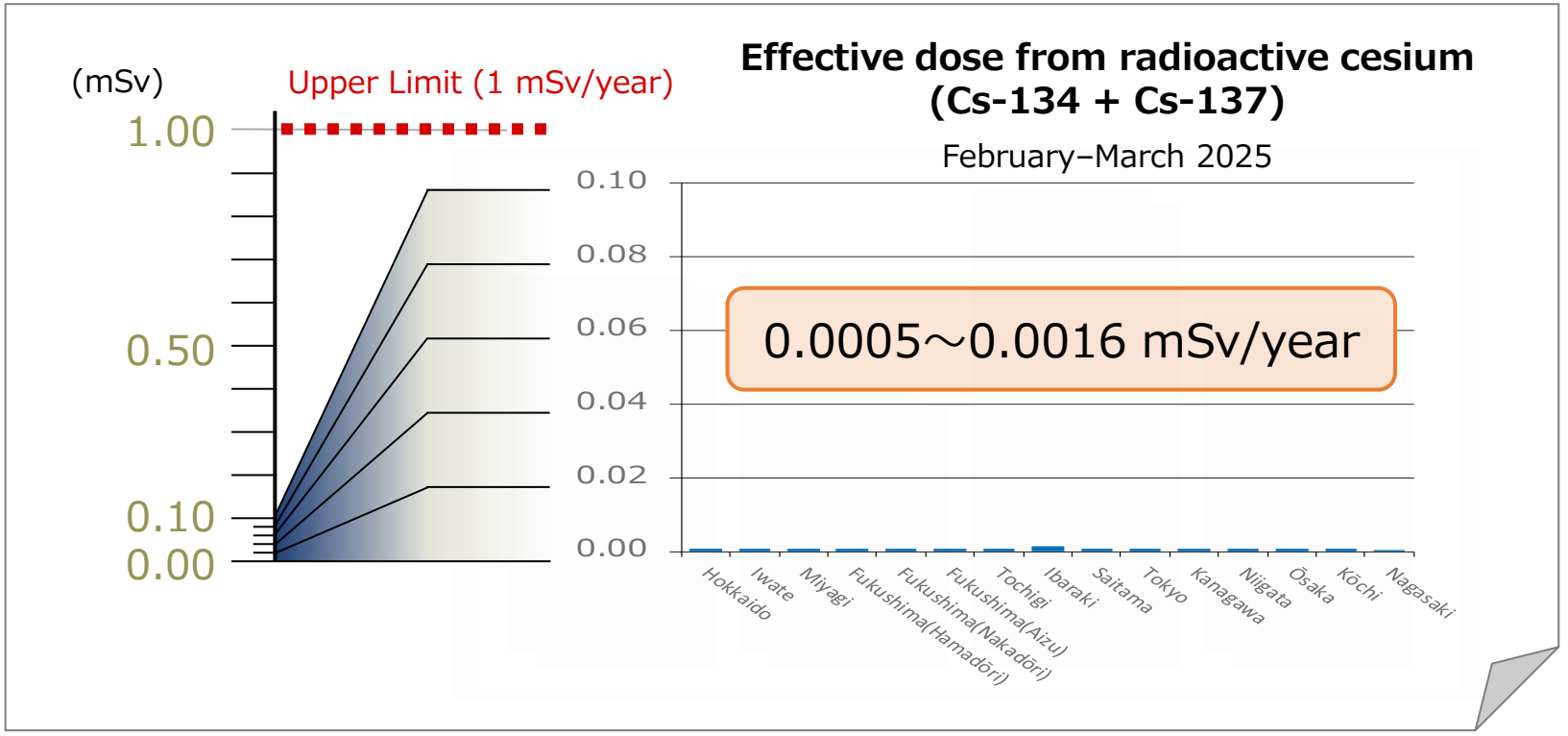
  Notes: For foods that are intended to be consumed in a dried state, such as *nori(*dried laver), *niboshi*(dried sardines), dried cuttlefish, raisin, etc., the limit for "General foods" applies to ingredients (in a natural state) and finished products (in a dry state).

2. Foods that are consumed after brewing process, such as tea leaves, and foods that are produced through extraction process, such as vegetable oils, like rice oil.

- There is a big difference in form between raw materials and finished products before consumption. The limit applies not to raw materials but to finished products. For tea leaves, the limit for "Drinking water" applies to a liquid extract obtained after brewing process. For edible oils, which are obtained through extraction from rice bran or oil seeds, the limit for "General foods" applies to oil as finished product.

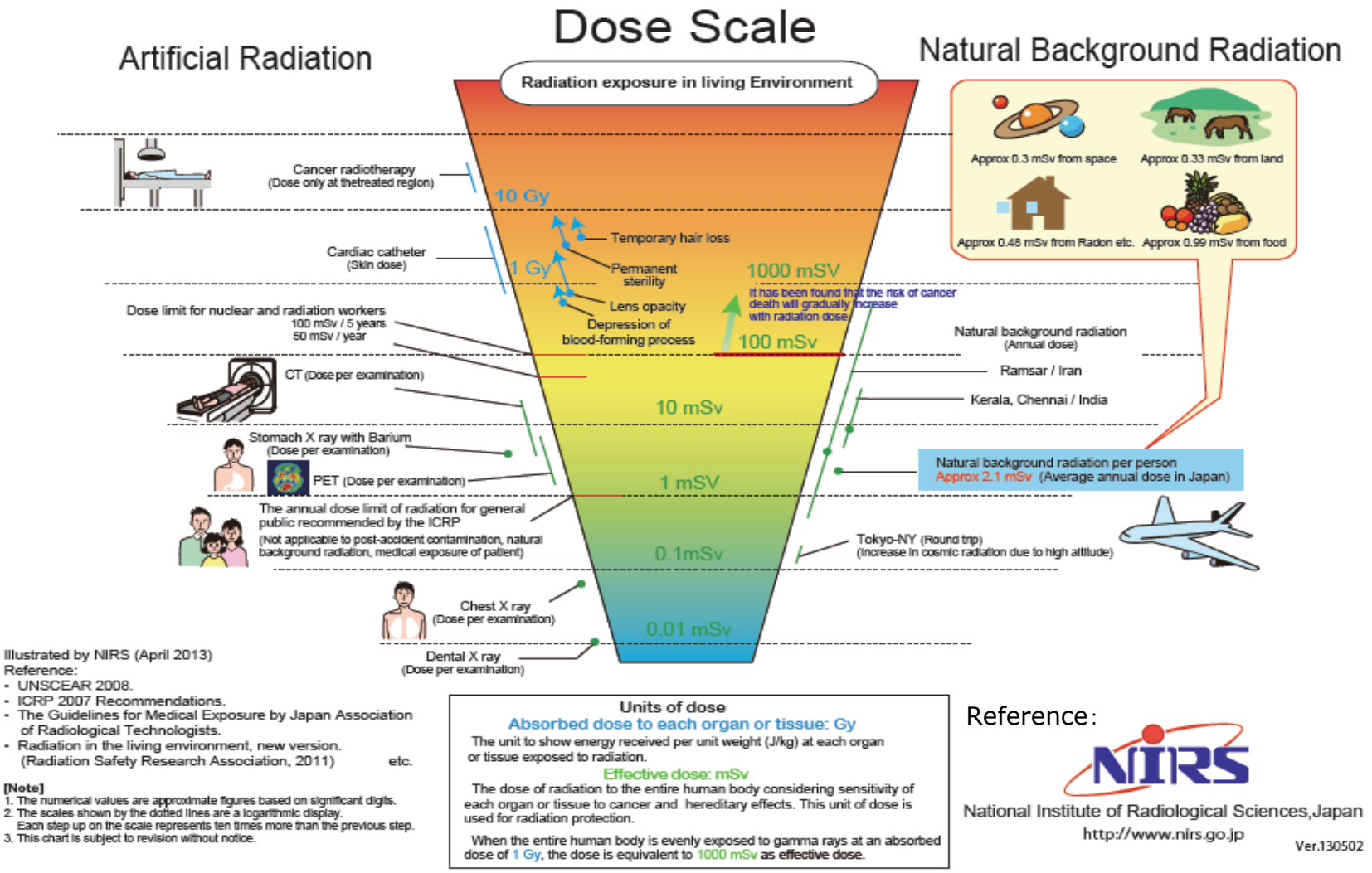
Estimations of effective dose from radioactive materials in foods

- Consumer Affairs Agency (CAA) surveyed the dietary intake of radionuclides in 15 areas across Japan in the February–March 2025 period and estimated the annual effective doses from radioactive materials derived from standard meals.
  - Foods were purchased in 15 areas in Japan including three areas in Fukushima Prefecture. Local grown products were selected, wherever possible.



The annual effective doses from radioactive cesium in foods were around 0.1 % of 1 mSv/year as the basis of setting of the current limits in this study.

Natural Background Radiation



Illustrated by NIRS (April 2013)
Reference:
- UNSCEAR 2008.
- ICRP 2007 Recommendations.
- The Guidelines for Medical Exposure by Japan Association of Radiological Technologists.
- Radiation in the living environment, new version. (Radiation Safety Research Association, 2011) etc.

[Note]
1. The numerical values are approximate figures based on significant digits.
2. The scales shown by the dotted lines are a logarithmic display. Each step up on the scale represents ten times more than the previous step.
3. This chart is subject to revision without notice.

Units of dose

Absorbed dose to each organ or tissue: Gy

The unit to show energy received per unit weight (J/kg) at each organ or tissue exposed to radiation.

Effective dose: mSv

The dose of radiation to the entire human body considering sensitivity of each organ or tissue to cancer and hereditary effects. This unit of dose is used for radiation protection.

When the entire human body is evenly exposed to gamma rays at an absorbed dose of 1 Gy, the dose is equivalent to 1000 mSv as effective dose.

Reference:

National Institute of Radiological Sciences,Japan
http://www.nirs.go.jp

Ver.130502

Compared with natural background radiation, additional radioactive cesium from the accident is quite small.