

Dose Limits

Comparison between ICRP Recommendations and Domestic Laws and Regulations

		Occupational exposure		Public exposure	
		ICRP	Laws and regulations concerning the prevention of radiation hazards (Japan)	ICRP	Laws and regulations concerning the prevention of radiation hazards (Japan)
mSv: millisieverts					
Effective dose limits		The average annual dose for the prescribed five years should not exceed 20 mSv . The annual dose for any single year should not exceed 50 mSv . (*1)	The average annual dose for the prescribed five years should not exceed 20 mSv . The annual dose for any single year should not exceed 50 mSv . (*3)	1 mSv/year (In special circumstances, a higher value of effective dose could be allowed in a single year, provided that the average over 5 years does not exceed 1 mSv per year.) (*1)	No dose limit is specified, but doses at the boundaries of the site, including those due to exhaust gas and discharged water, are regulated not to exceed the dose limit of 1 mSv/year. (*3)
Equivalent dose limits	The Lens of the Eye	The average annual dose for the five years should not exceed 20 mSv/year and the annual dose for any single year should not exceed 50 mSv. (*2)	The average annual dose for the five years should not exceed 20 mSv/year and the annual dose for any single year should not exceed 50 mSv. (*3)	15 mSv/year (*1)	—
	Skin	500 mSv/year (*1)	500 mSv/year (*3)	50 mSv/year (*1)	—
	Fingers and toes	500 mSv/year (*1)	—	—	—
Dose limits for female radiation workers		The effective dose of an embryo/a fetus during gestation after reporting pregnancy should not exceed 1 mSv. (*1)	5 mSv/3 months Equivalent dose limit for the abdominal surface after coming to know of pregnancy until delivery: 2 mSv Internal exposure: 1 mSv (*3)	—	—

Source: Prepared based on the following:

*1 2007 Recommendations of the ICRP;

*2 ICRP Publication 118 "ICRP Statement on Tissue Reactions and Early and Late Effects of Radiation in Normal Tissues and Organs - Threshold Doses for Tissue Reactions in a Radiation Protection Context"; and

*3 Japanese laws and regulations concerning the prevention of radiation hazards (as of December 2021)

Dose Limits

ICRP Recommendations and Responses of the Japanese Government

	2007 Recommendations of the ICRP		Responses at the time of the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS
Occupational exposure	Rescue activities (Volunteers who have obtained the relevant information)	When benefits for other people outweigh the rescuers' risks, dose limits are not applied.	Special Provisions of the Ordinance on Prevention of Ionizing Radiation Hazards (Ministry of Health, Labour and Welfare) The emergency exposure dose limit was temporarily raised to 250 mSv from the conventional level of 100 mSv (from March 14 to December 16, 2011).
	Other emergency activities	1,000 mSv or 500 mSv	The Ordinance on Prevention of Ionizing Radiation Hazards was partially amended to raise the exceptional emergency dose limit to 250 mSv (enforced on April 1, 2016).
Public exposure	Emergency exposure situations	The limit is to be set within the range of 20 to 100 mSv/year .	e.g. Standards for evacuation in Deliberate Evacuation Areas: 20 mSv/year
	Reconstruction period (Existing exposure situations)	The limit is to be set within the range of 1 to 20 mSv/year .	e.g. Additional exposure dose to be achieved in the long term: 1 mSv/year

mSv: millisieverts

Source: Prepared based on the 2007 Recommendations of the ICRP and the Special Provisions of the Ordinance on Prevention of Ionizing Radiation Hazards (Ministry of Health, Labour and Welfare: MHLW)

Dose Limits

Indices Concerning Radioactive Materials in Foods

Radionuclide	Japan	Codex Alimentarius Commission	EU	US
Radioactive cesium (Bq/kg)	Milk 50 Infant foods 50 General foods 100	Infant foods 1,000 General foods 1,000	Milk 1000 Infant foods 400 General foods 1,250	All foods 1,200
Upper limits for additional doses	1mSv	1mSv	1mSv	5mSv
Assumed percentages of foods containing radioactive materials	50%	10%	10%	30%

- * The Codex Alimentarius Commission is an intergovernmental body created in 1963 by the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) for the purpose of protecting consumers' health and ensuring fair-trade practices in the food trade, etc.; The Commission establishes international standards for foods.
- * Standard limits incorporate effects of the amount of food intake and assumed percentages of foods containing radioactive materials. Therefore, the values are not suitable for inter-comparison.
- * Indicated standard limits for drinking water are the WHO guidance levels of radioactive materials, which are referred to in respective countries, and standard limits for radioactive materials vary by country due to differences in adopted preconditions. Therefore, the values are not suitable for inter-comparison.

Source: Modified "Food and Radiation Q&A" published by Consumer Affairs Agency

Dose Limits

Relation between Exposure Doses and Health Risks

- Deterministic effects (tissue reactions)
- Cancer risks increase.



The level of cancer risks is unknown (or minor if any).

(mSv/year)

100

20

1



Range of reference levels in an emergency

Range of reference levels in a recovery and reconstruction period

- Lower than the level of risks due to natural radiation.

- Cumulative lifetime exposure doses below 100 mSv