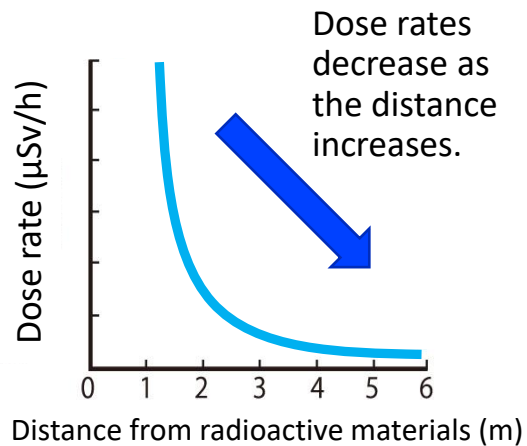
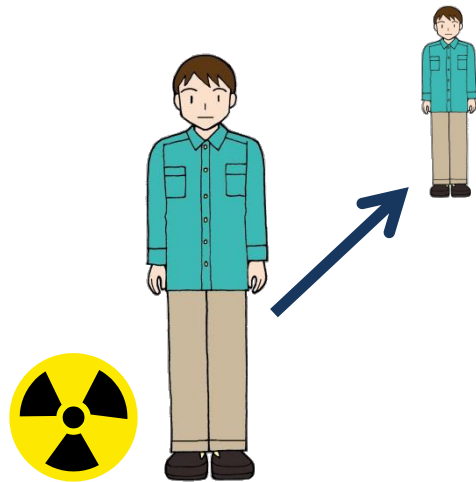
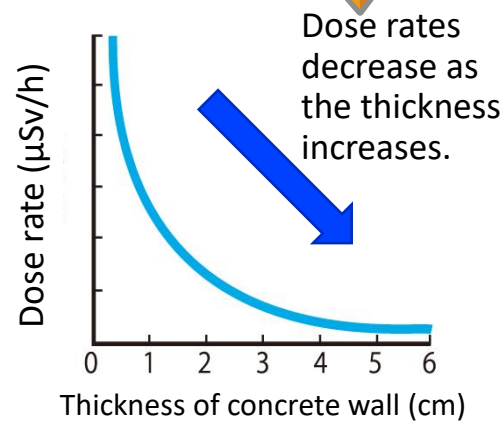
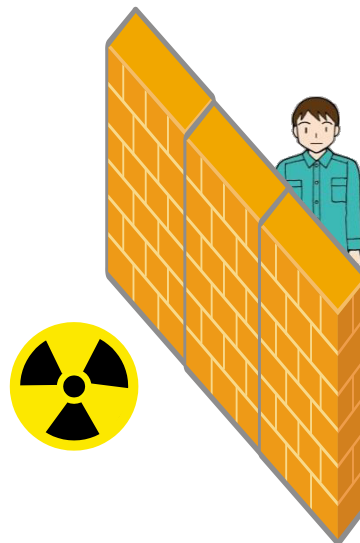


Three Principles of Reduction of External Exposure

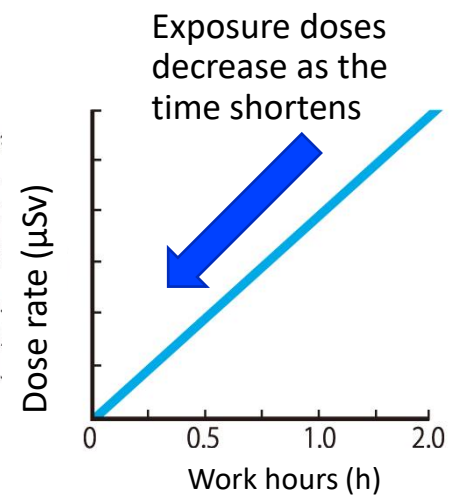
(i) Keep away
(**distance**)



(ii) Place something heavy in between
(**shielding**)



(iii) Shorten time while being close to radioactive materials
(**time**)



- Prevent radioactive materials from entering the body through the mouth, nose or wounds, in principle.
- Wash off soil immediately from the body, shoes and clothes.
- Be aware of the information on the release and pollution of radioactive materials.
- Be careful not to lose nutritional balance, being excessively worried about a small amount of radioactive materials below the standard limit.



■ Studies on reduction of external exposure indoors

- ✓ From the results of measurements of ambient doses inside and outside of buildings, the reduction coefficient*¹ in wooden and light-gauge steel houses is evaluated as 0.38 on the first floor and 0.49 on the second floor.

(Source: N. Matsuda et al.: *J Environ Radioact* 166: 427-435, 2017.)

- ✓ From the results of measurements of ambient doses inside and outside of buildings, the median value of the reduction coefficient for wooden houses is evaluated as 0.43.

(Source: H. Yoshida et al.: *SCIENTIFIC REPORTS* 4: 7541, 2014.)

■ Studies on reduction of internal exposure indoors

- ✓ From the results of measurements of radioactivity concentrations inside and outside of buildings, the decontamination factor*² for radioactive materials in the air is evaluated as 0.64 for particulate I-131 and 0.58 for Cs-137.

(Source: T. Ishikawa et al.: *Environ Sci Technol* 48:2430-2435, 2014.)

- ✓ As factors for internal exposure indoors, the natural ventilation rate, temperature differences between inside and outside of rooms, wind speed, and the total coverage and ages of buildings, etc. were set as parameters and were examined experimentally, thereby evaluating the coefficient of reduction of internal exposure (varying within the range of 0.1 to 1).

(Source: J. Hirouchi et al.: *ASRAM2018-010*, 2018.)

*1: Ratio of a dose within a building when assuming the dose outdoors as 1

*2: Ratio of the concentration within a building when assuming the concentration outdoors as 1

Removal of Radioactive Cesium through Cooking and Processing of Foods

Radioactive materials can be reduced through cooking.

Item	Cooking/Processing methods	Removal rate (%)
Leaf vegetables (spinach, etc.)	Washing - Boiling	7~78
Bamboo shoots	Boiling	26~36
Japanese radish	Peeling	24~46
Nameko mushrooms (raw)	Boiling	26~45
Fruits (grape, persimmon, etc.)	Peeling	11~60
Marron	Boiling - Peeling astringent skin	11~34
Japanese plum	Salting	34~43
Cherry leaves	Salting	78~87
Fish	Cooked lake smelt soaked in Japanese sweet and peppery vegetable sauce	22~32

- Avoid eating wild foods too much.

$$\text{Removal rate (\%)} = \left(1 - \frac{\text{Total amount of radioactivity in cooked or processed foods (Bq)}}{\text{Total amount of radioactivity in raw materials (Bq)}} \right) \times 100$$