

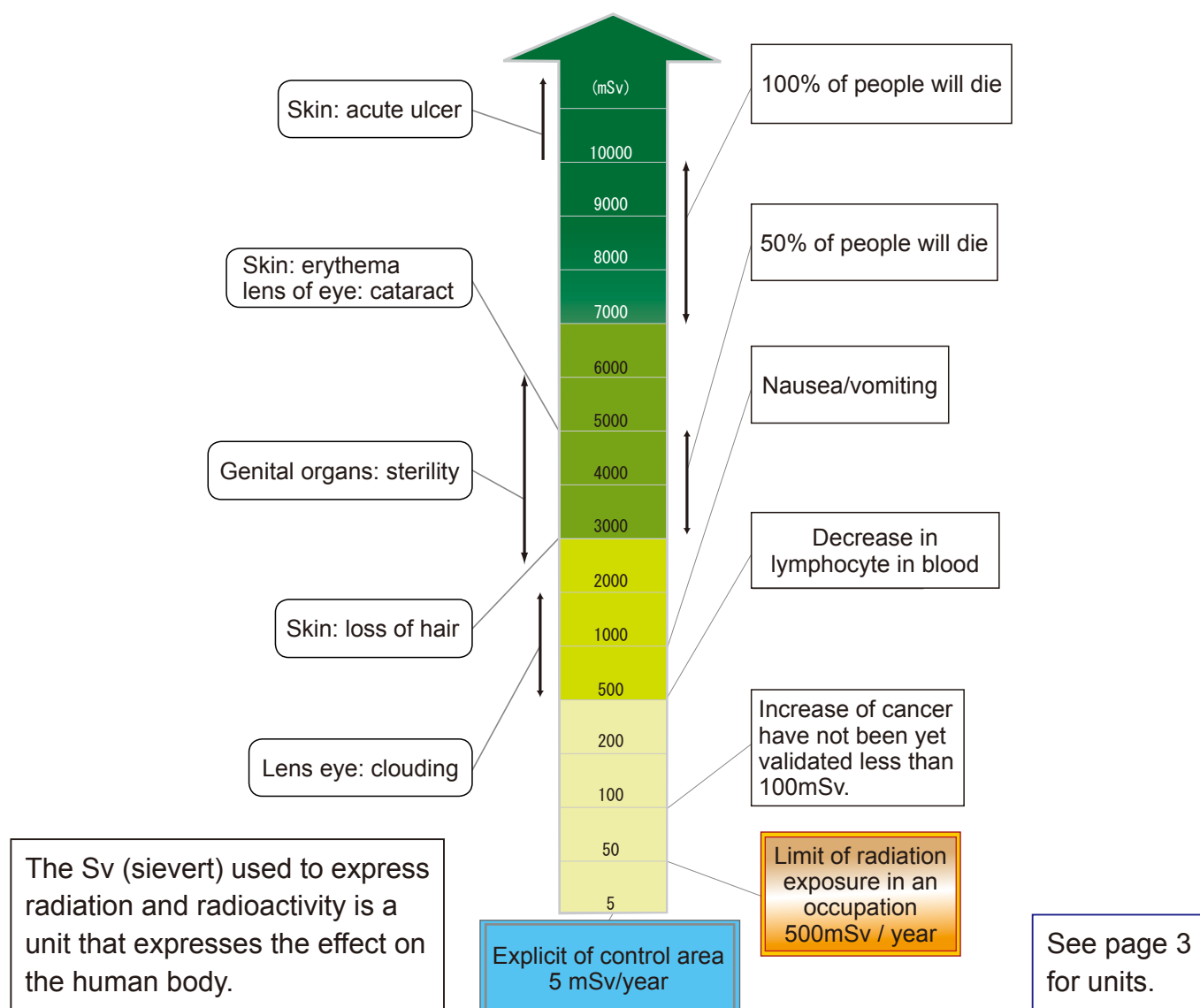


# Common items: Prevention measures of ionizing radiation

## The important points for Safety and health

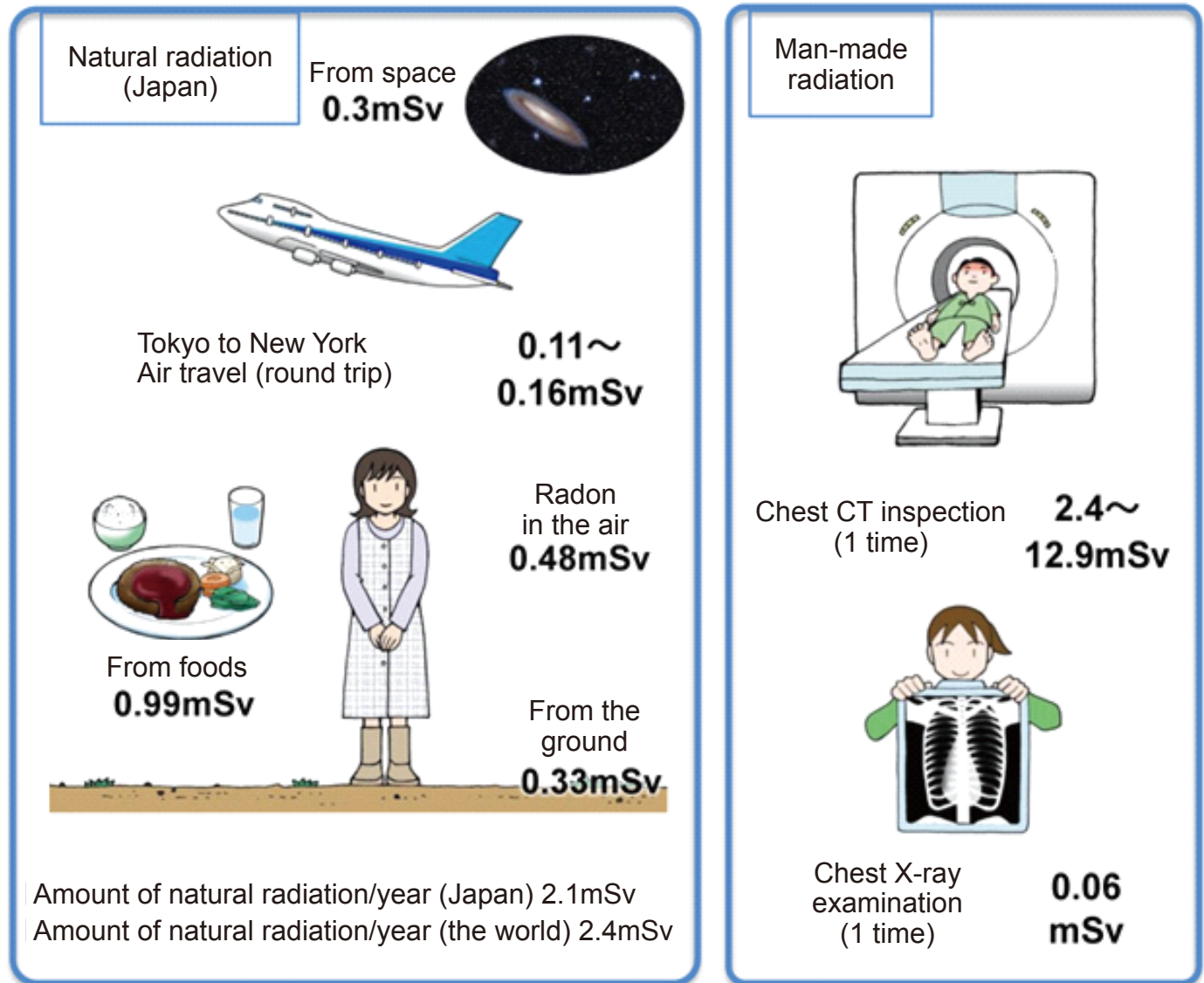
### (1) Impact of ionizing radiation on the ecology 1

There is no clear medical knowledge whether a failure occurs when the radiation dose received is small (less than 100 mSv). And long-term studies have shown no increase in cancer in individuals who received the radiation dose less than 100 mSv.



# Common items: Prevention measures of ionizing radiation

## (2) Impact of ionizing radiation on the ecology 2



Source:

Basic Information on Radiation Risks: Reconstruction Agency Web page

United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) Report 2008,

Nuclear Safety Research Association: Life Environmental Radiation, 2011

ICRP 203, and others

Expected industries	Effective dose by industry
(Examples)	(Reference: 2018 average)
○ Non-destructive inspection	○ Non-destructive inspection: 0.40 mSv / year
○ General industry	○ General industry: 0.06 mSv / year

Source: Distribution table of effective dose by industry (total of 4 companies)  
(Based on the website of the Individual Dosimetry Association)

## (3) Knowledge of how to manage exposure dose

○ Units used for exposure dose management

### **cpm (count per minute):**

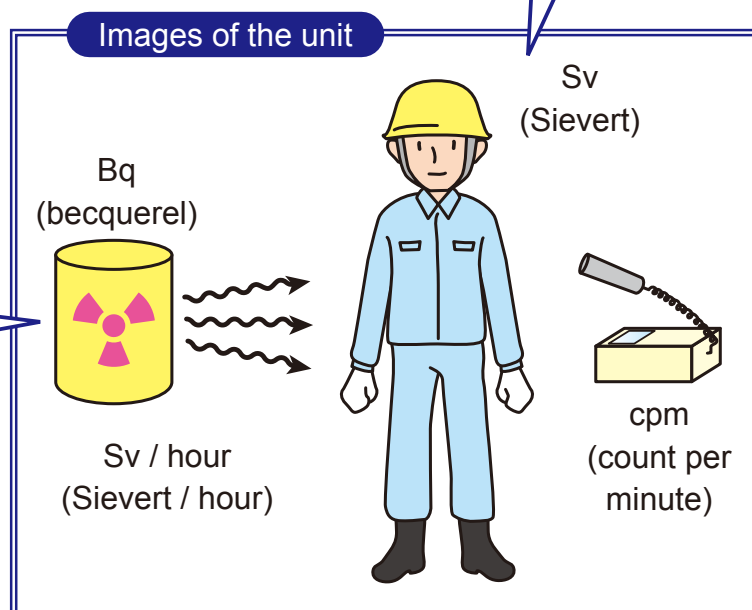
A unit that represents the number of radiation measured per minute by a radiation meter.

### **Bq (becquerel):**

A unit that represents the number of atomic nuclei that disintegrate per second

### **Sv (sievert):**

A unit used to evaluate the risk of developing genetic effects such as cancer when a person is exposed (units converted so that the type of radiation and the effects on each tissue/organ can be evaluated throughout the body).

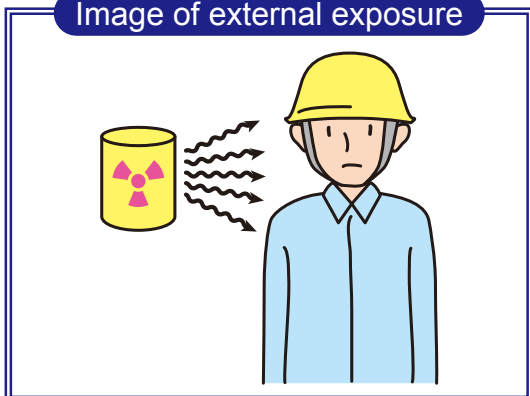


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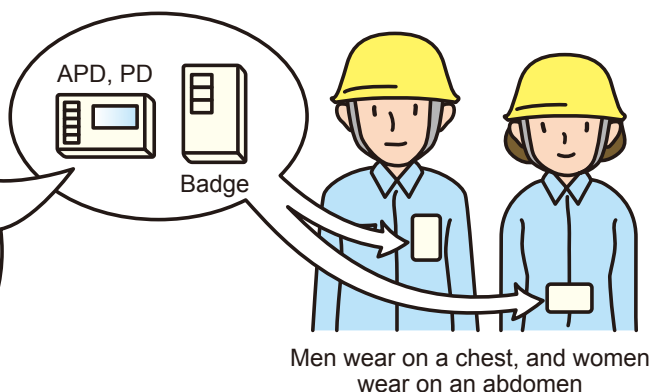
### (4) Measurement of external exposure dose

While entering the management area (while engaged in decontamination work, etc.), attach a radiation measuring instrument to following body parts.

Image of external exposure

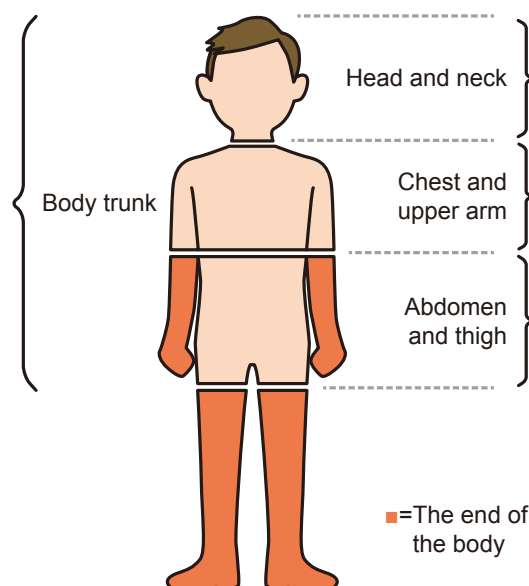


- Chests of men or women diagnosed as not likely to become pregnant
- The abdomen of women (excluding the above women)



**If the dose received on a body is not uniform, it must also be worn on the next part.**

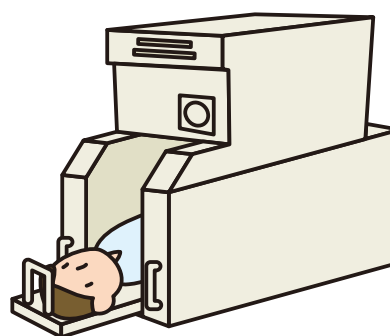
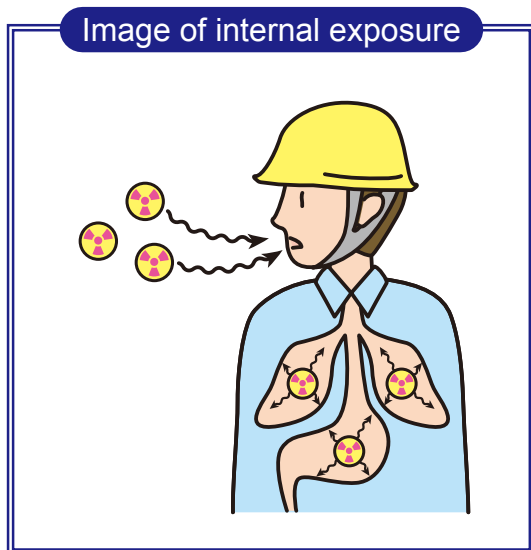
- Body parts such as head, neck, chest/upper arm, and abdomen/thigh, that most likely to be exposed to radiation
- If the parts most likely to be exposed to radiation is other than the above, that most likely to be exposed to radiation



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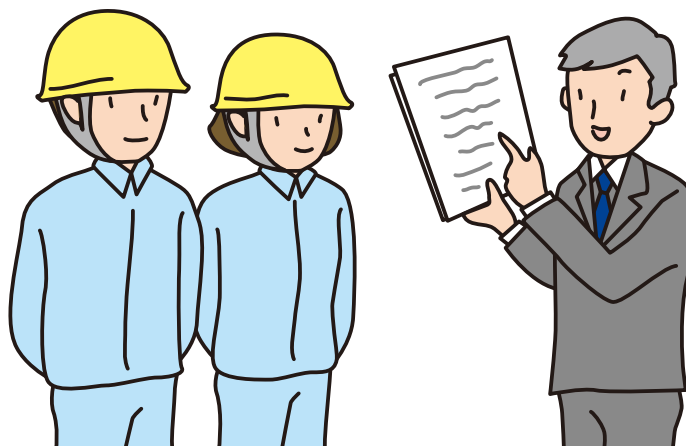
### (5) Measurement of internal exposure dose

For internal exposure, the whole body counter (WBC) etc. is used to calculate the exposure dose from radioactive materials taken by the inhalation or the ingestion.



WBC  
(Whole Body Counter)

Receive the measurement results of the external exposure and the internal exposure from a company and store them in a safe place.



## Common items: Prevention measures of ionizing radiation

### (6) Knowledge of how to manage exposure dose

The radiation exposure limit is  
**100 mSv for 5 years and 50 mSv for 1 year.**

- Women (except those who are diagnosed as not likely to become pregnant) are 5 mSv per 3 months
- Pregnant women are 1mSv during that period

\* It is prescribed in Ordinance on Prevention of Ionizing Radiation.

### Prohibition of smoking

Smoking or eating or drinking in workplaces where there is a risk of inhaling or ingesting radioactive material is prohibited.





## Common items: Prevention measures of ionizing radiation

### (7) Special education

Be sure to receive a special education before engaging in radiation works for the first time.

- Radiography operations
- Operations of handling nuclear fuel materials at a processing facility
- Operations that handle nuclear fuel materials at a nuclear reactor facility
- Disposal of accident-derived wastes
- Decontamination works
- Operations under the specific dose

Subjects in an education are:

- Influence of ionizing radiation on living bodies
- Work methods and handling of facilities and operations



### (8) Medical examinations

■ If you always work such as radiation works, have a medical examination by a doctor.

□ Implementation frequency is:

- When hiring or reassigning of the work
- After the medical examination at the time above, once every 6 months, regularly

□ Diagnostic items are:

- The investigation and the evaluation of exposure history, Inspection of the number of red and white corpuscles in a blood sample, The eye inspection and the skin inspection for cataracts, etc.

(In some cases, some of them may be omitted.)

■ Receive the results of the medical examination from a company and store it in a safe place.

