Radiation in Daily-life

※Unit : μ Sv

Radiation dose (microsievert: μ Sv)

250,000

50,000

10,000

1,000

100

10

Upper limit of radiation dose permitted for people who engage in emergency work.
[250,000 μ Sv/year]

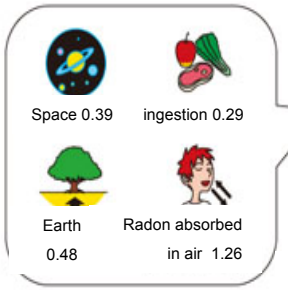
Upper limit of radiation dose permitted for radiation workers, police , and firefighters who engage in disaster prevention.
[50,000 μ Sv/year]

[～10,000 μ Sv/year]

Radiation dose in Guarapari(Brazil) per year.

Chest CT scan
[6,900 μ Sv/each time]

[～2,400 μ Sv/year]



Global average

Natural radiation dose per year.

Dose limit for public per year (except for medical care).
[1,000 μ Sv/year]

Gifu ⇔ Kanagawa

Maximum difference of the average of natural radiation dose in each prefecture.
[～400 μ Sv/year]

gastrointestinal X-ray examination.
[600 μ Sv/each time]

An air travel between Tokyo and New York (RT).
(Increased cosmic radiation at high altitude.)
[～200 μ Sv/round trip]

[50 μ Sv/each time]
Chest X-ray examination.

[22 μ Sv/year]
Evaluated dose of radiation from radioactive substance emitted from the nuclear fuel reprocessing plant per year.

[10 μ Sv/year]
Standard radiation dose from Clearance level.

[50 μ Sv/year]
Standard dose of radiation around a nuclear plant (light water reactor).
(Actual result is far below the value.)

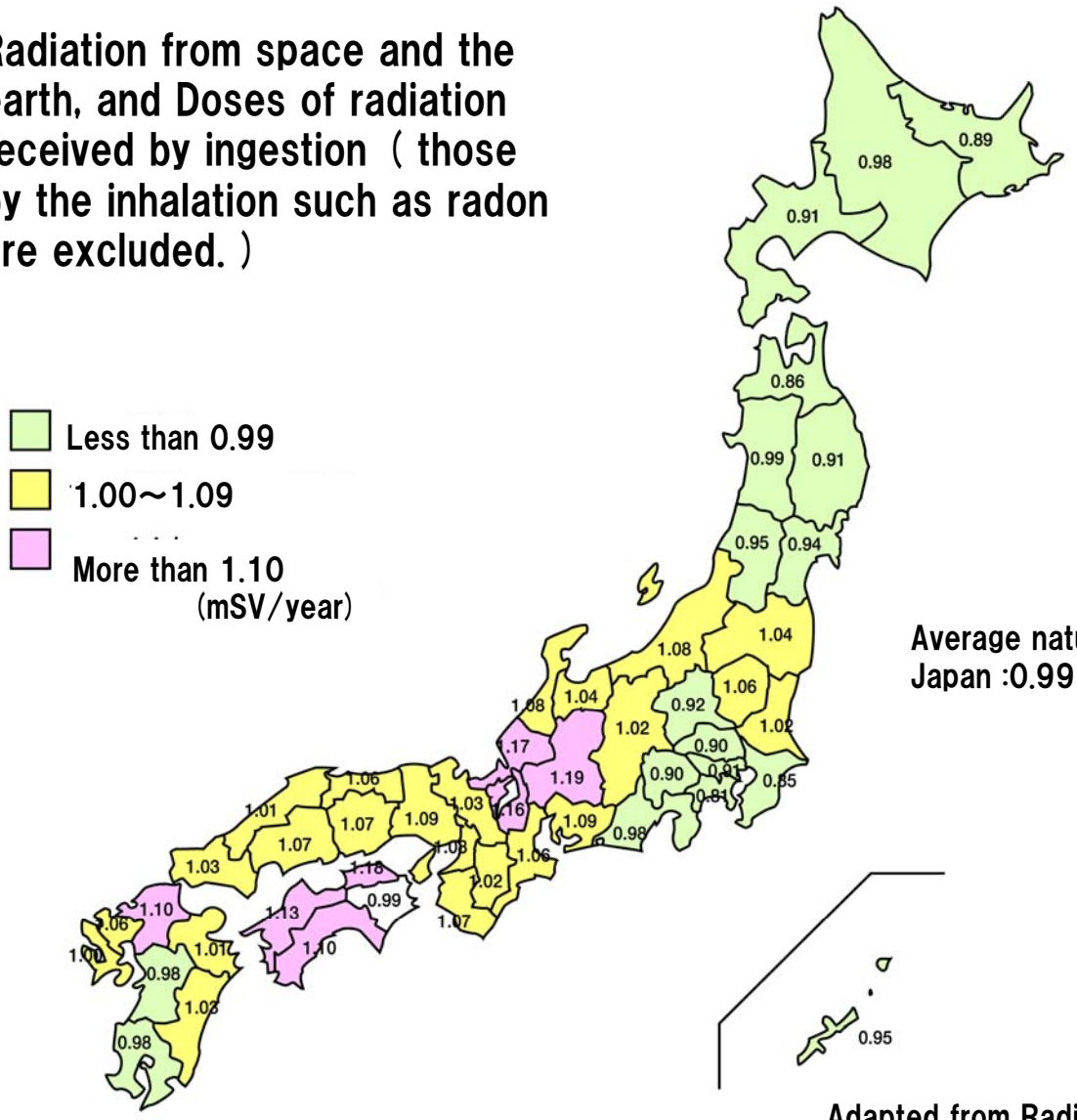
(Ref) Average dose rate at the monitoring post of Tokyo (9:00～17:00, 15, March) : 0.144 μ Gy/h = 1261 μ Gy/y
(1Gy≒1Sv)

sumber : MOFA *(Ministry of Foreign Affairs of Japan)*

Natural doses of radiation in Japan

Radiation from space and the earth, and Doses of radiation received by ingestion (those by the inhalation such as radon are excluded.)

※Unit : mSv
1mSv=1000 μ Sv



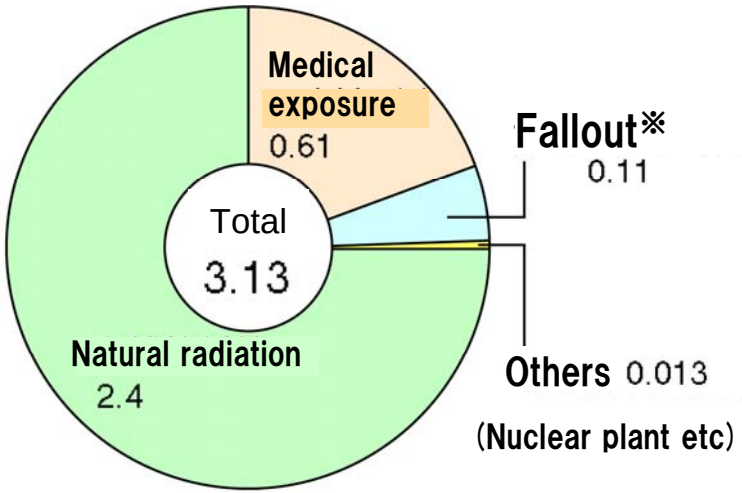
Average natural radiation dose in Japan :0.99 (mSV/year)

Adapted from Radiological Sciences Vol.32, No.4, 1989

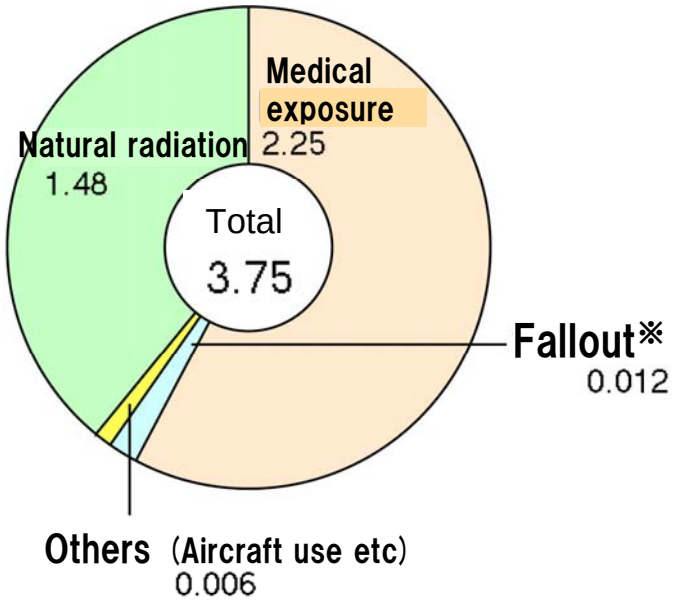
Annual doses per person received from nature and man-made source of radiation

※Unit : mSv
1mSv=1000 μ Sv

Average doses in the World



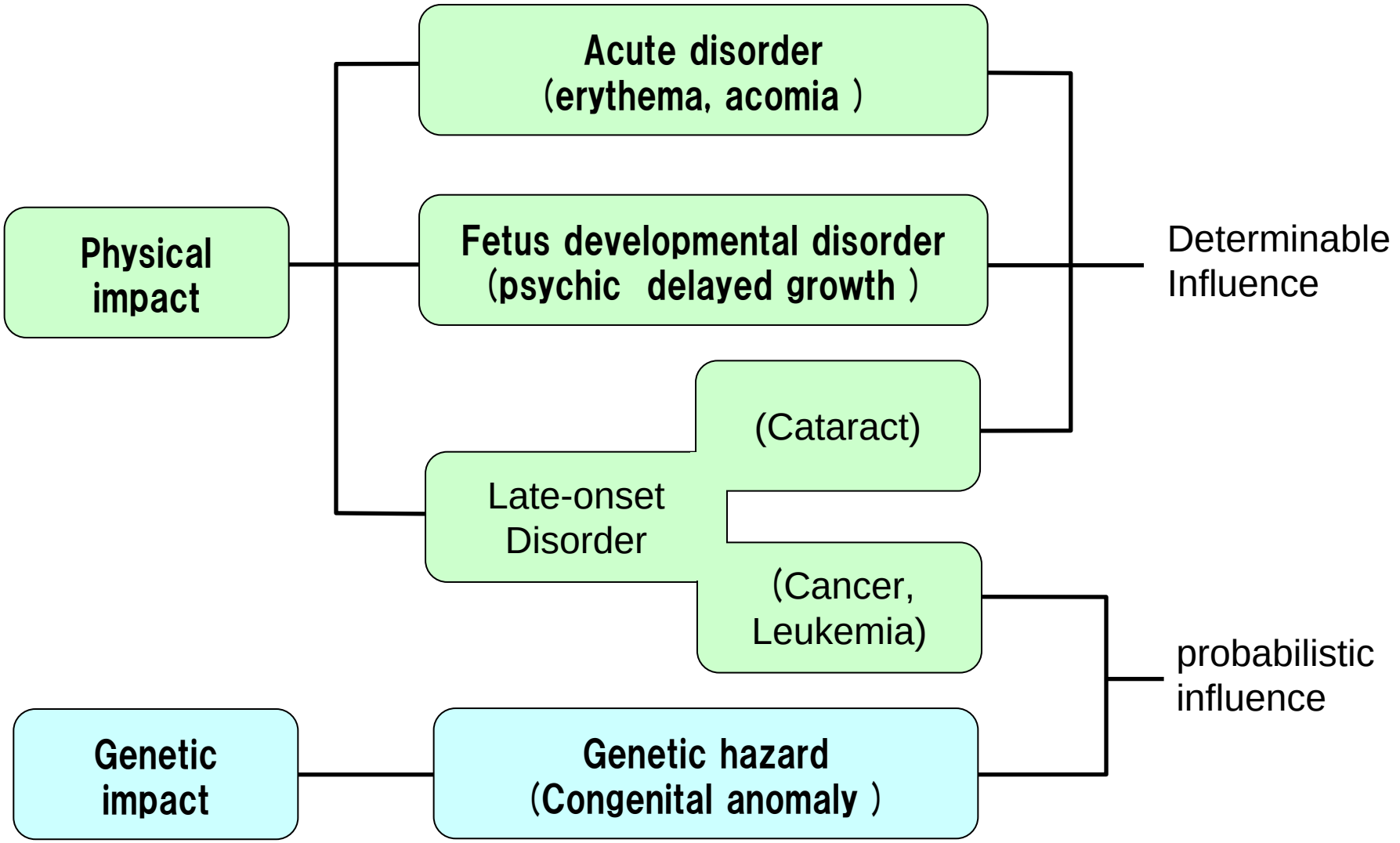
Average doses in Japan



※Fallout : the residual radiation hazard from a nuclear experiment

Adapted from「UNSCEAR Report 1992」,and「Life environmental radiation」Former Science and Technology Agency （ Japan)

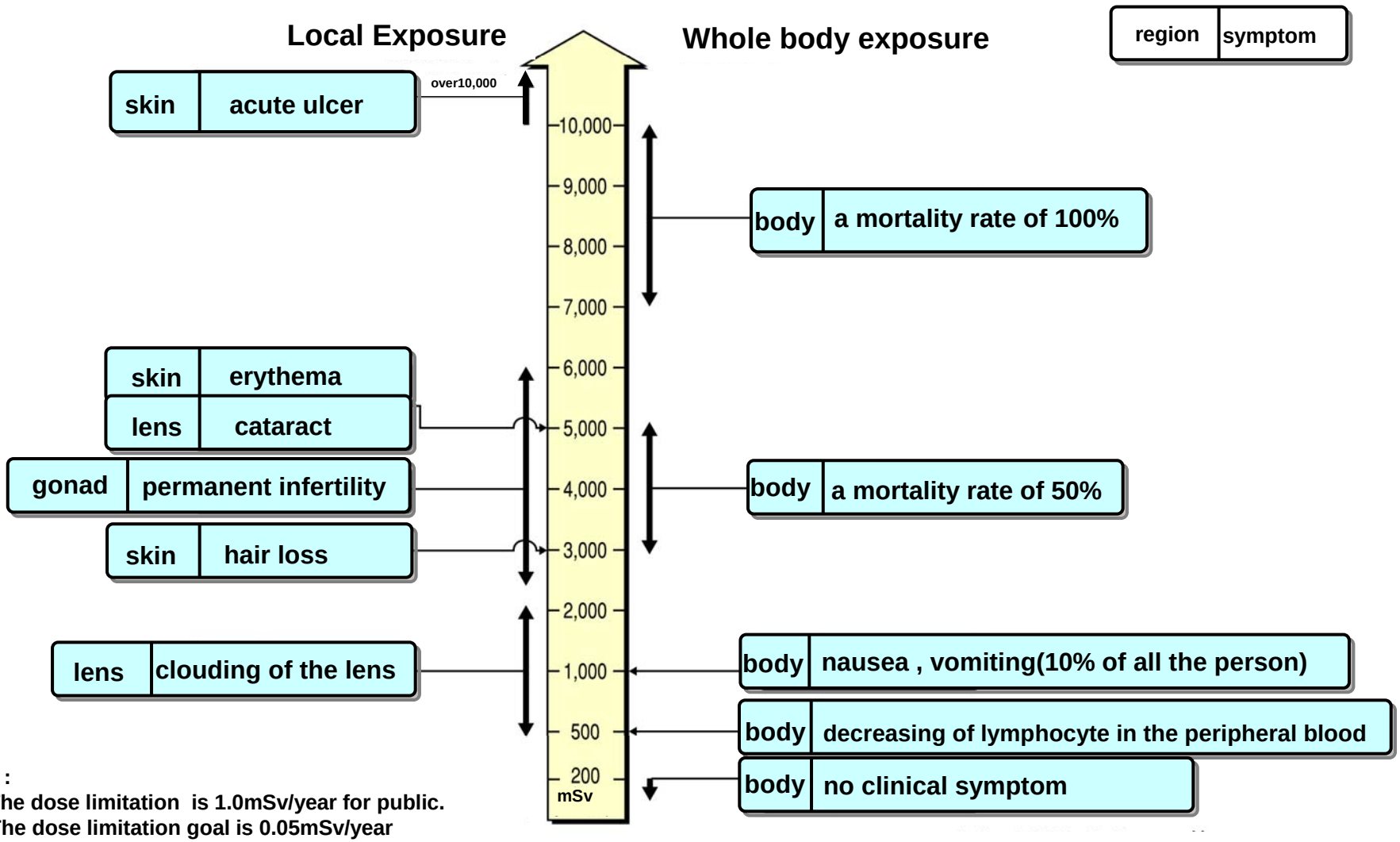
Effects of radioactivity to the human body



Adapted from「Book to understand effects of atomic radiation」
(RADIATION EFFECTS ASSOCIATION)

Acute Radiation Impact

※Unit : mSv
1mSv=1000 μ Sv



Note :
a) The dose limitation is 1.0mSv/year for public.
b) The dose limitation goal is 0.05mSv/year around an atomic power plant

Reference : ICRP Pub.60, etc.

A Guideline on Control Measures Concerning Nuclear Disaster Prevention

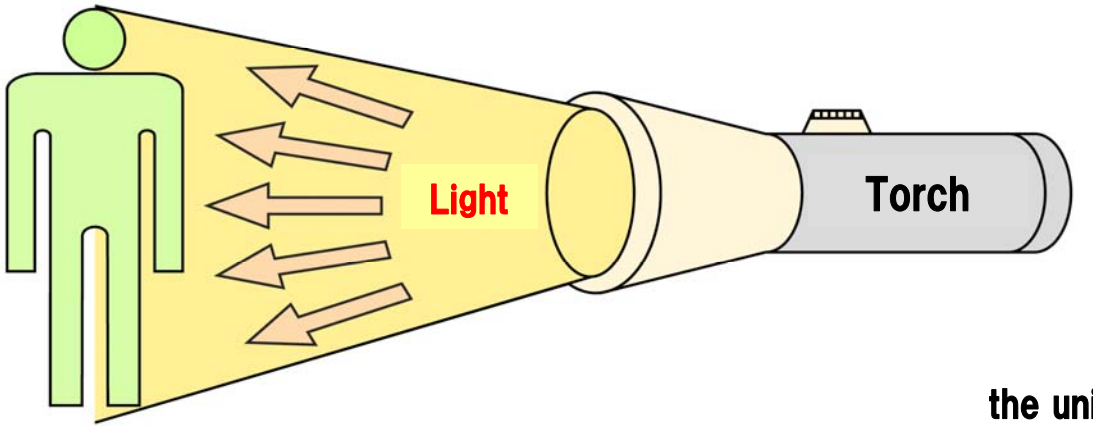
Indices for Evacuations

Projected Dose (Unit: mSv)		Safety measures
Effective dose under external exposures	• Thyroid equivalent dose by radioactive iodine • Equivalent dose of bone surface or lung by uranium • Equivalent dose of bone surface or lung by plutonium	
10~50	100~500	Run into a building or house, stay there, shut the windows and keep air tightness. If the nuclear facility emits neutron ray or gamma ray directly, take shelter in a concrete building under instructions of the disaster countermeasures office.
50 or more	500 or more	Take shelter in a concrete building according to instructions of the disaster countermeasures office

1) The disaster countermeasures office figures out the projected dose, and instructs residents near the nuclear facility the safety measures, based on the dose.
2) “Projected dose” is what someone will receive out of doors while radioactive matter or ray is emitted.
3) Shall take steps of safeguards for the higher level of effective dose under external exposures, if the Thyroid equivalent dose by radioactive iodine, the Equivalent dose of bone surface or lung by uranium, and the Equivalent dose of bone surface or lung by plutonium are not in same level.

Reference: Nuclear Safety Commission of Japan,
The disaster prevention countermeasure of Nuclear Institutes (in Japanese), June 2001

Radioactivity and Radiation

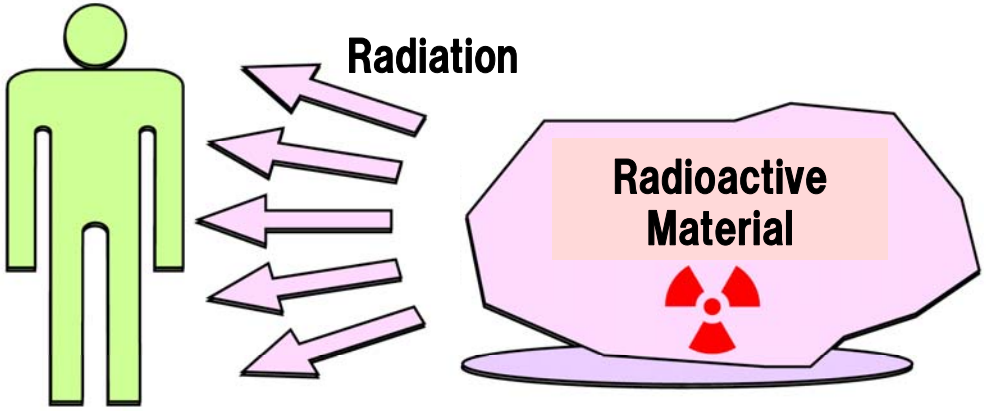


Light Emission Ability

↓

the unit of luminous intensity
[Candela (cd)]

the unit of brightness
[Lux (lx)]



Radiation Emission Ability (Radioactivity)

↓

the unit of radioactive intensity
[Becquerel (Bq)]

the unit of radiation dose, expressing the biological effects of radiation
[Sievert (Sv)]