Protecting Health After Disasters: The Evolution of Post-Earthquake Measures and Preparations You Can Start Now

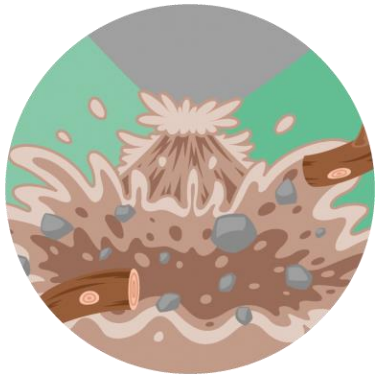
Fukushima Medical University

Masaharu Tsubokura

Various Disasters






What health problems emerged after the nuclear incident?

Radiation Exposure

- Trauma Injury
- Evacuation of vulnerable population
- Medical Collapse
- Evacuation shelter control
- Disaster-induced hypertension
- Thrombosis
- Heart diseases, Strokes
- Insomnia

- Mental and Psychological diseases
- Lifestyle-related diseases
- Deterioration in access to medical care
- Decline in the rate of medical checkups
- Problems with temporary housing
- Reconstruction works health issues

- Changes in the social environment
- Collapse of Long-term care services
- Disparity, Poverty
- Aging, depopulation, isolation
- Problem of free medical care
- Prejudice, and Discrimination issues
- Long-term evacuation related things

Tsubokura et al. J Natl. Inst. Public Health, 67 (1) : 2018.

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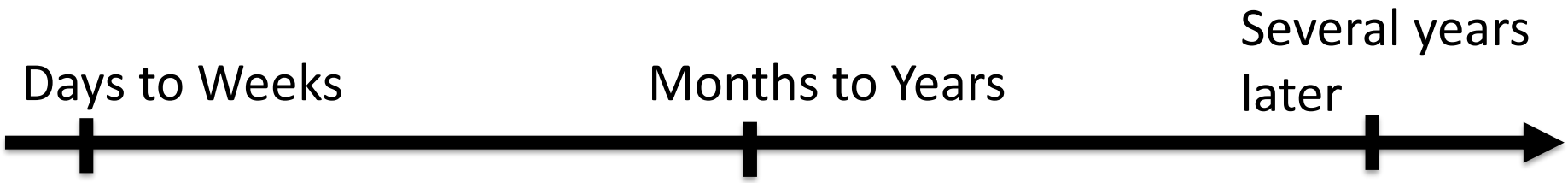

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It is important to view health issues not as the result of individual choices or actions, but as being shaped by society and the surrounding environment.

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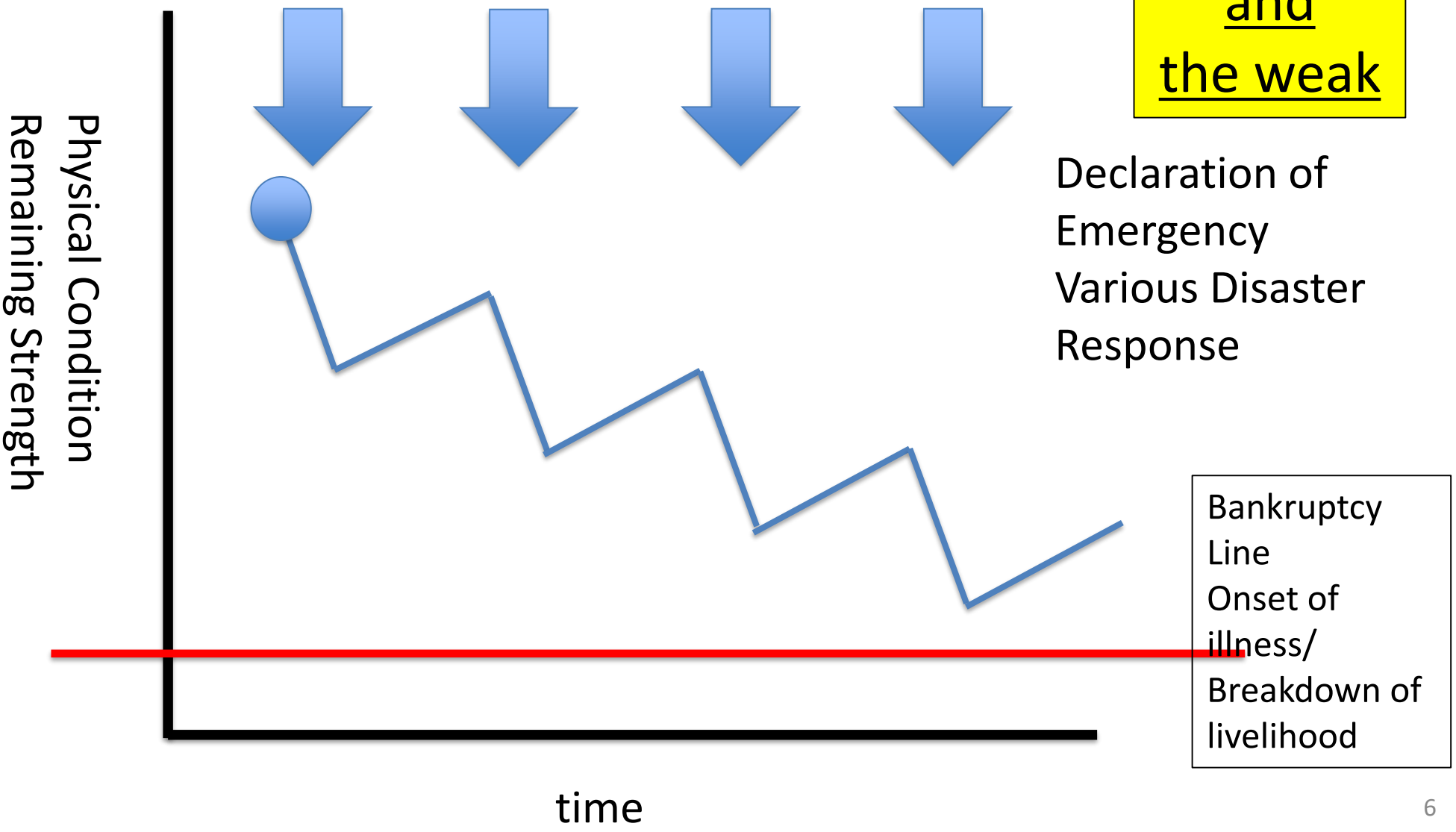
The Differences Between the Three Disasters

- The Great Hanshin-Awaji Earthquake
- The Great East Japan Earthquake & The Fukushima Daiichi Nuclear Power Plant Accident
- The Noto Peninsula Earthquake

Why does health deteriorate after a disaster?

shaking up and the weak



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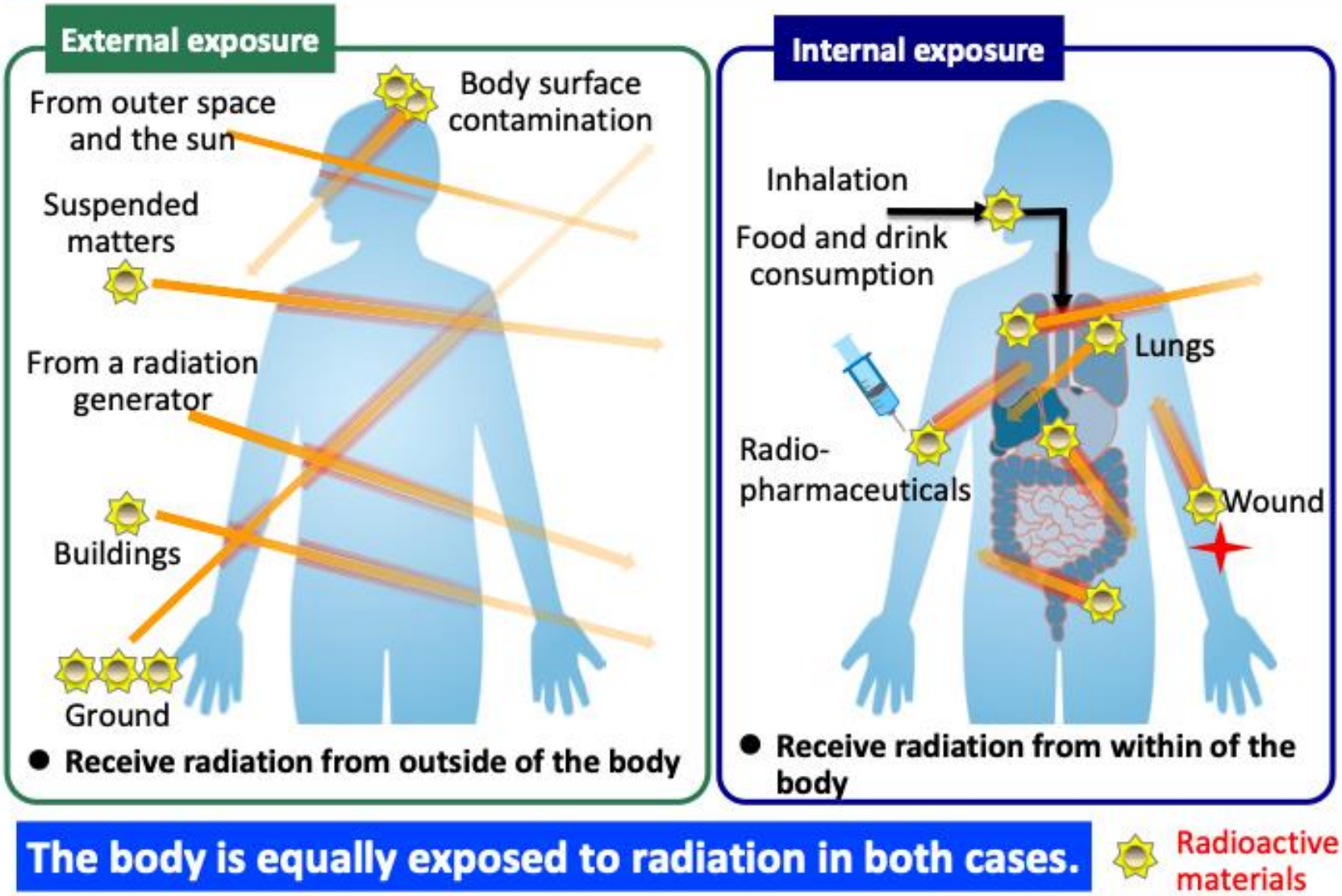
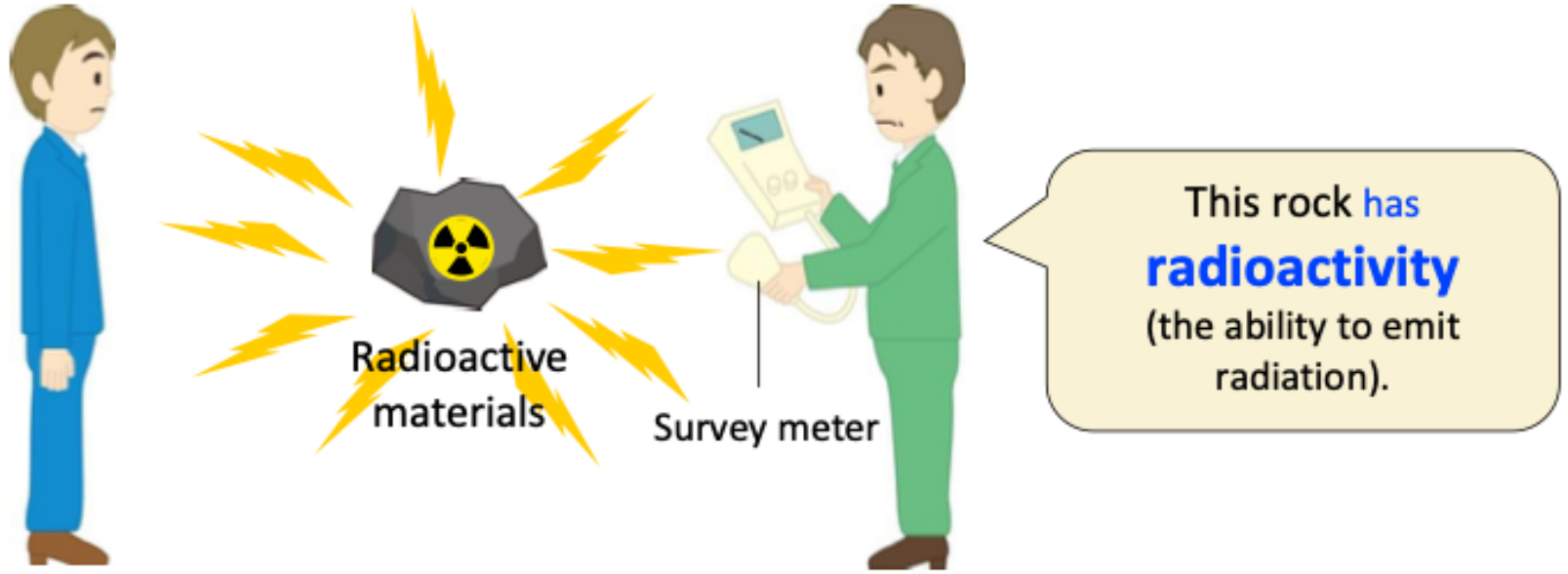
Exposure Routes

Internal and External Exposure



Radiation and Radioactivity

Units of Radiation and Radioactivity



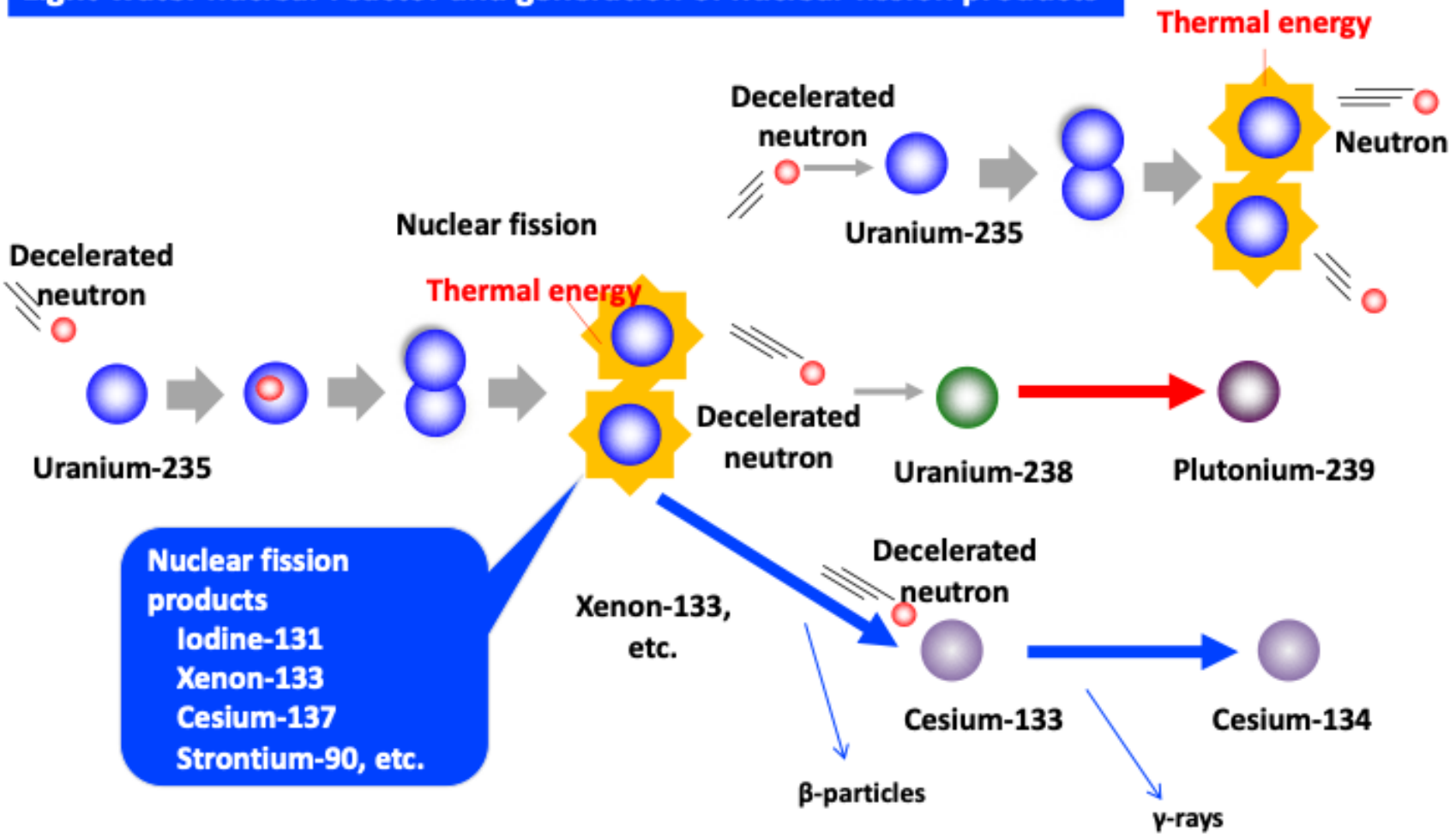
Becquerel (Bq)
Unit for intensity of radiation:
one nucleus decays (disintegrates) per second = 1 becquerel

Sievert (Sv)
Unit of radiation exposure dose which a person receives:
associated with radiation effects

Nuclear Disaster

Products in Nuclear Reactors

Light-water nuclear reactor and generation of nuclear fission products

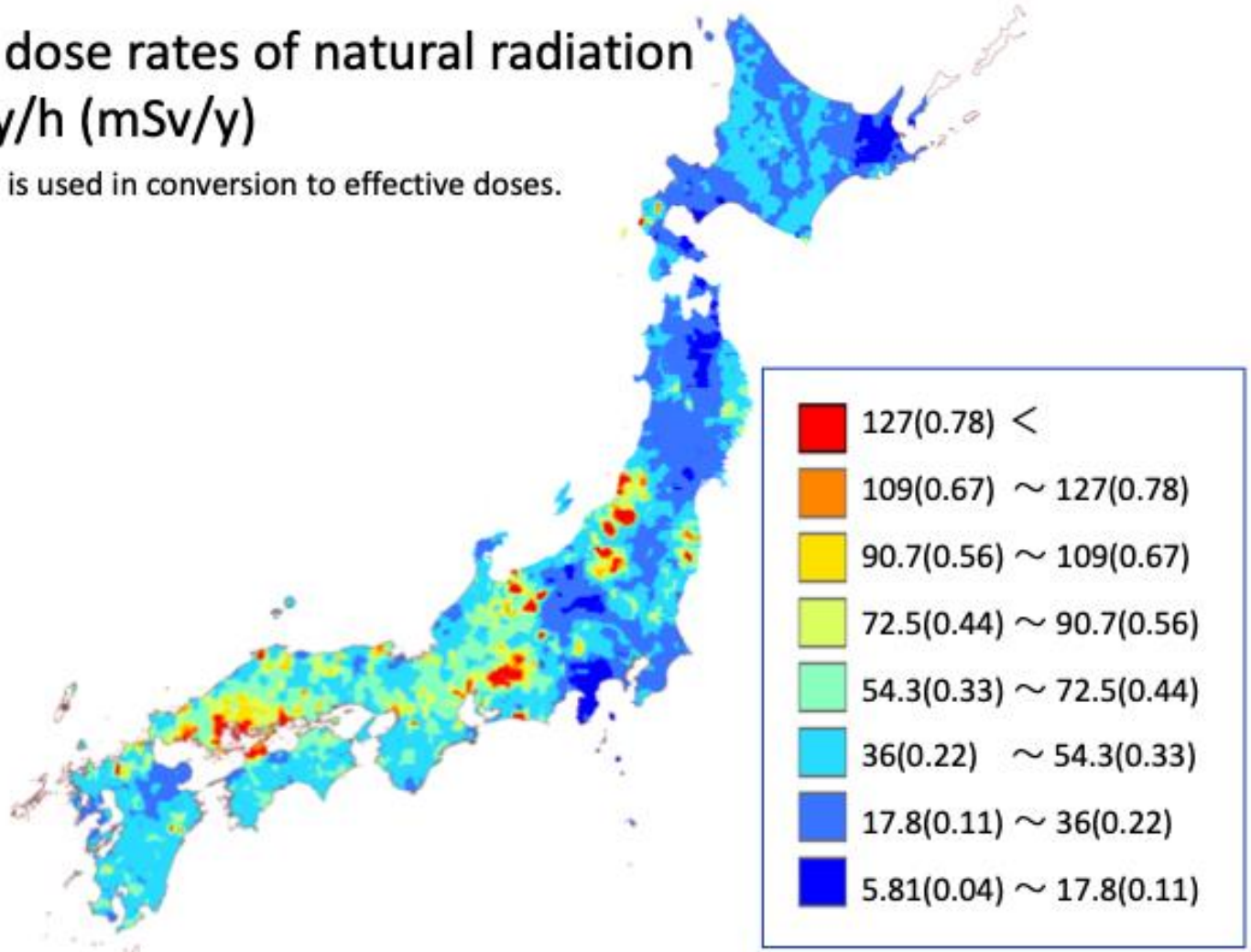


Radiation around Us

Ground Radiation (Japan)

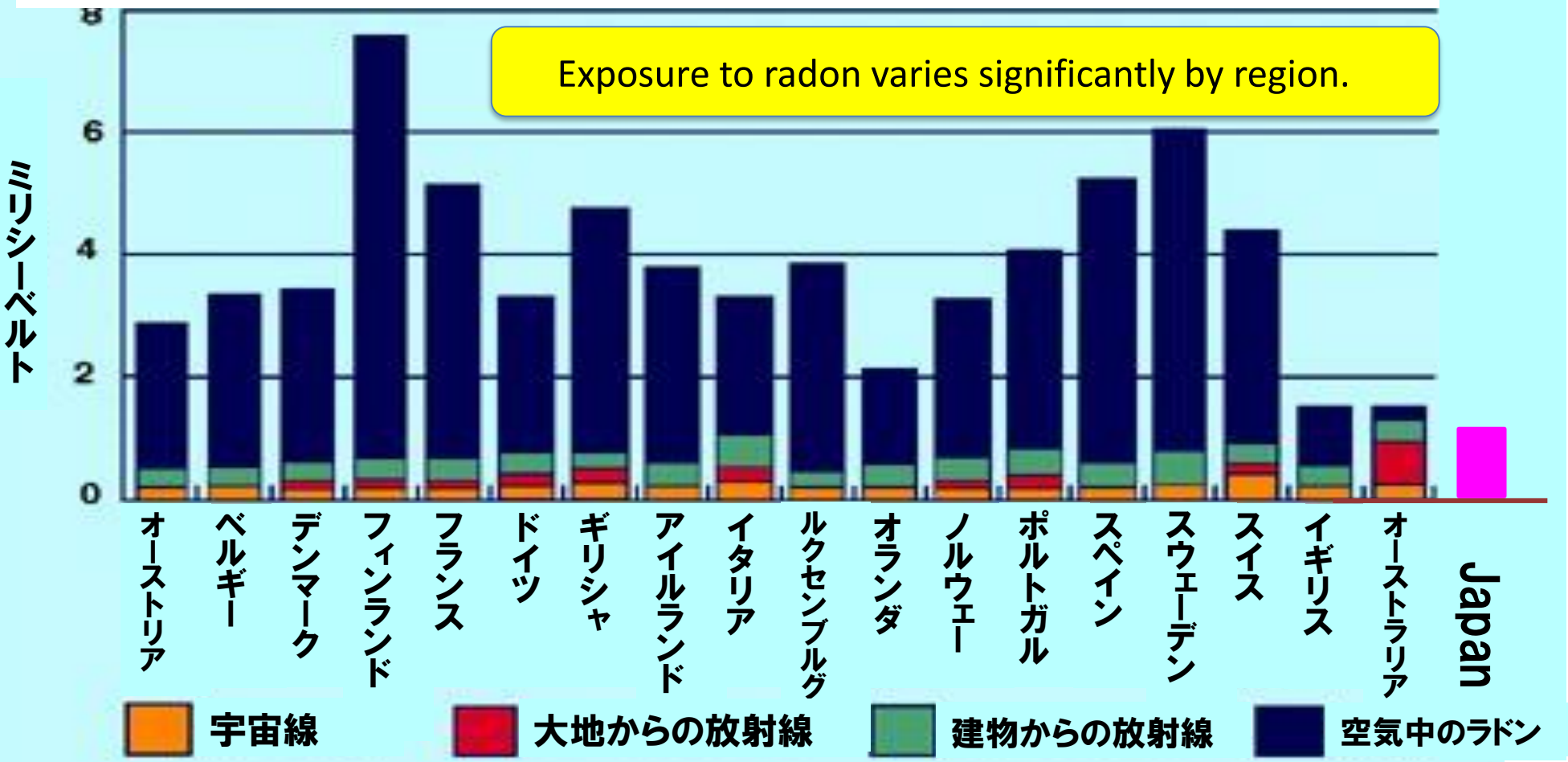
Ambient dose rates of natural radiation Nanogray/h (mSv/y)

- 0.7 Sv/gray is used in conversion to effective doses.



Source: Prepared based on the website of the Geological Society of Japan

Annual Radiation Exposure from Natural Background Radiation Around the World



- 花崗岩は自然放射線量が高いので、石造りの建物や石畳は放射線量が高い
- 欧州の地質の一部はラドンを多く含む

出典：World Nuclear Association　永岡氏のスライドより転載

No genetic effects of radiation have been observed in humans.

- No increase in cancer or other diseases (genetic effects) has been observed in the second-generation survivors (hibakusha second generation) born to parents who were exposed to radiation after the atomic bombings in Hiroshima and Nagasaki.

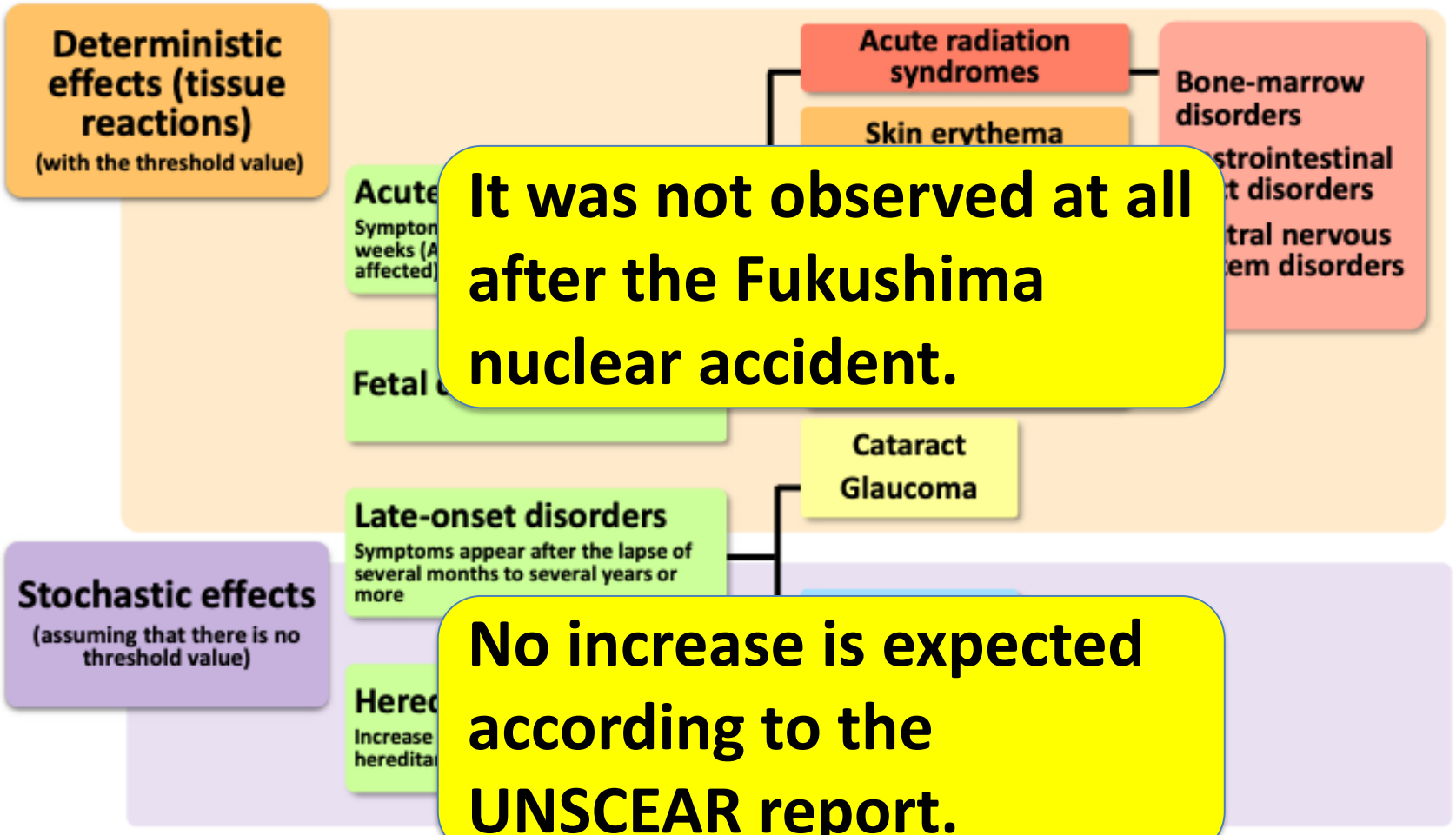
- The proportion of children with chromosomal abnormalities did not differ between those whose parents were exposed to radiation near the hypocenter and those whose parents were not.

- A comparison between thousands of children born to individuals who underwent childhood cancer treatment and the children of their untreated siblings found no differences in the frequency of chromosomal abnormalities, inherited diseases, or congenital anomalies.

Effects on Human Body

Types of Effects

- Consideration is to be given to what health effects arise after radiation exposure, the amount of exposure, parts exposed to radiation (whole-body exposure or local exposure), and the exposure situation over time (acute or chronic).

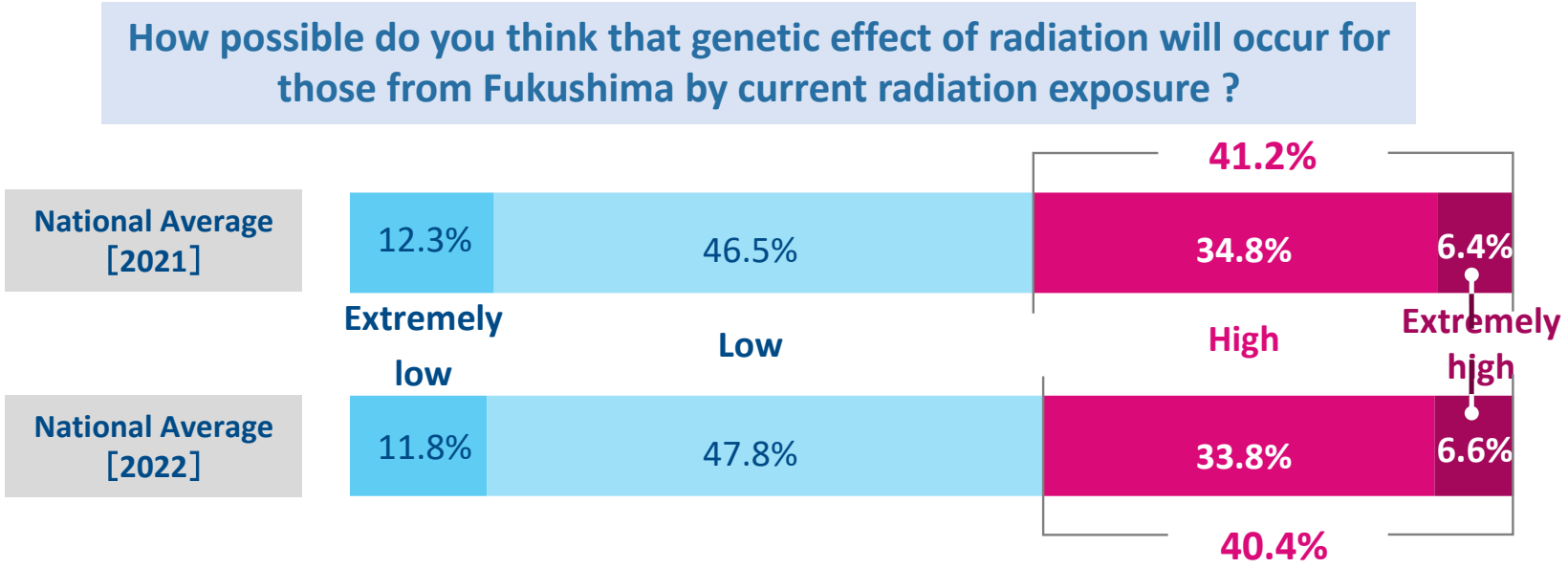


Assessments by International Organizations

UNSCEAR 2020/2021 Report (7/8): Assessment of Health Effects on the General Public

- In the years since the publication of the UNSCEAR 2013 Report, no adverse health effects among Fukushima Prefecture residents have been documented that are directly attributable to radiation exposure from the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS.
- No acute health effects that could have been attributed to radiation exposure had been reported.
- Currently available methods would most likely not be able to demonstrate an increased incidence in the future disease statistics due to irradiation.
- The UNSCEAR's updated statistical power analyses suggest that excess thyroid cancer risk that could be inferred from radiation exposure was most likely not discernible in any of the age groups considered.
- These observations suggest that the increased incidence rates may be due to over-diagnosis (i.e., detection of thyroid cancer that would not have been detected without the screening and would not have caused symptoms or death during a person's lifespan).

General view of “GU-GU-RU” Project



Answers from Fukushima prefecture is the lowest proportion for incorrect recognition for genetic effects of radiation.

Goal：

<u>To reduce the proportion of those who believe</u> the current radiation exposure in Fukushima residents are likely to provoke genetic effects of radiation, **<u>from 40 % in FY 2020 to 20 % by FY 2025.</u>**

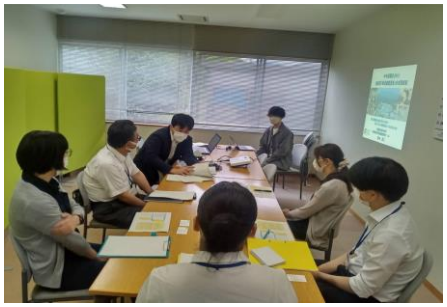
出典：環境省令和２年度放射線の健康影響に関する情報発信実施業務 アンケート調査（2021年3月）
令和３年度放射線の健康影響に関する情報発信実施業務 アンケート調査（2022年3月） より抜粋

Reporting the Results of the Fukushima Health Management Survey

Target: Municipal Government Officials (Primarily Public Health Nurses)

Overview of the Center Meeting: Planning, managing projects, and considering support based on requests from local governments.

Introduction of Results from Implemented Projects



Overview of the Liaison Meeting

Opportunities for Risk Communication Regarding Radiation Exposure

Returning Research Findings to the Community

楢葉町ゆるキャラ
「ゆず太郎」

Naraha Town, Fukushima Prefecture: Health Seminar (Exercise Classes & Physical Fitness Assessment – Starting January 2024)

Target: Naraha Town Residents (Residents Who Returned After Evacuation)

筋トレでフレイル予防

楢葉町と福医大連携

健康教室 始まる

全8回 医学療法士ら指導

習慣化を目指す

フレイル予防 筋肉鍛える

福島医大協力 楢葉町が高齢者教室

Holding Health Seminars Twice a Month

Conducting Exercise Classes & Physical Fitness Assessments

Returning Results to Residents and Providing Explanations

Publication of Measurement Data in Academic Papers

Handling Interviews from Newspapers & Article Publication

Summary

- Based on radiation levels following the nuclear accident, no future health effects from radiation exposure are expected.
- However, a wide range of health issues must be considered in the aftermath of the nuclear accident.
- There is a need to enhance overall knowledge about radiation.
- While the national approach to nuclear disasters has significantly evolved, continuous improvements and revisions are necessary.
- Ongoing regional support and information sharing are crucial, and Fukushima Medical University will continue various initiatives to address these challenges.

Thank you