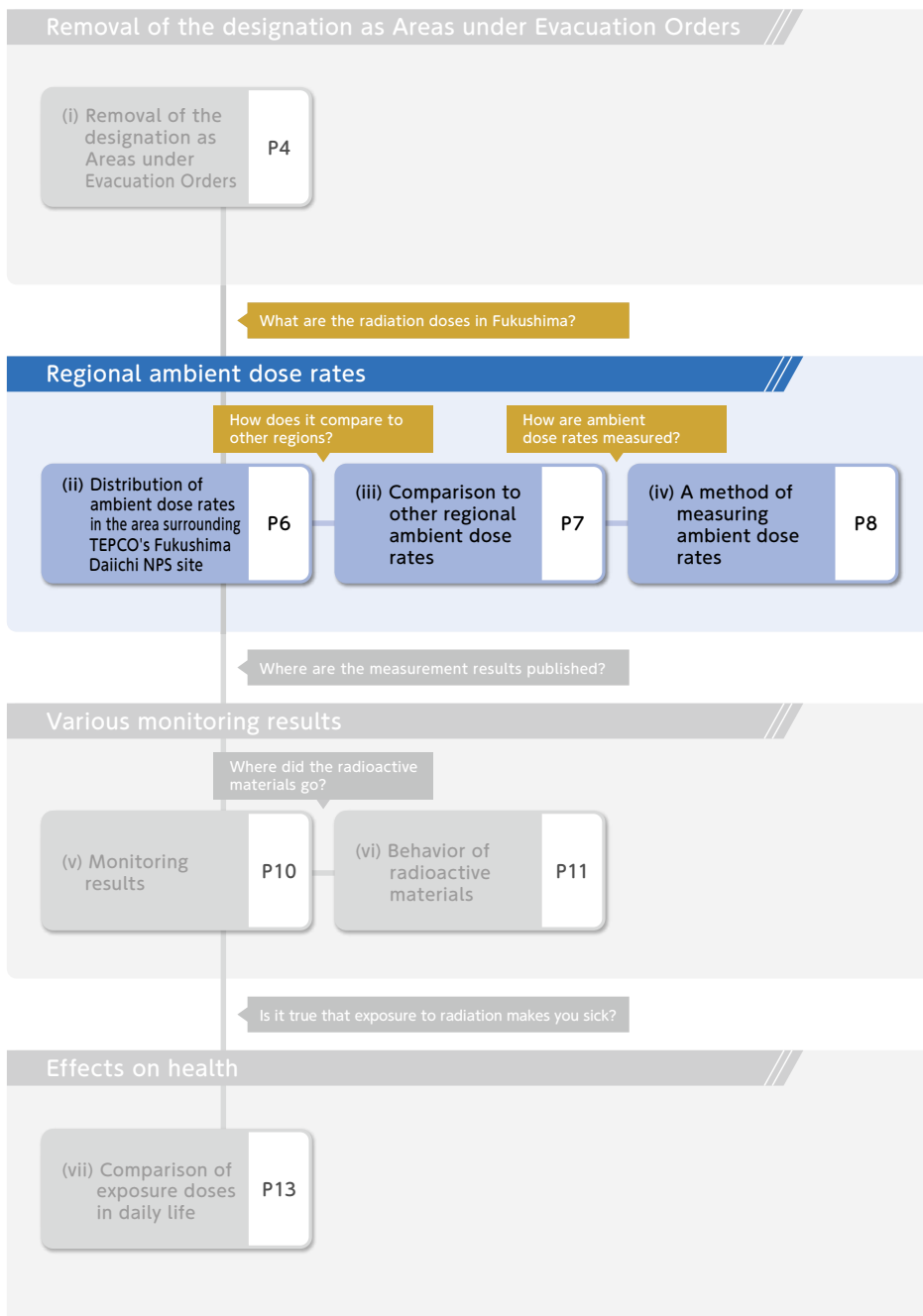




Theme: Regional ambient dose rates

Radiation monitoring continues in areas around TEPCO's Fukushima Daiichi NPS. Information about the state of radiation monitoring, methods for measurement of ambient dose rate, and measuring instruments is presented here.

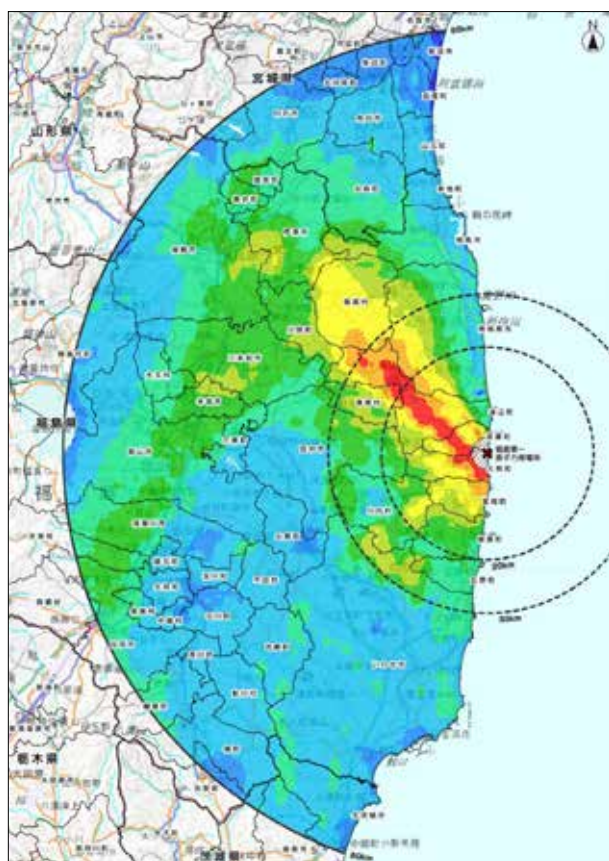


(ii) Distribution of ambient dose rates in the area surrounding TEPCO's Fukushima Daiichi NPS site

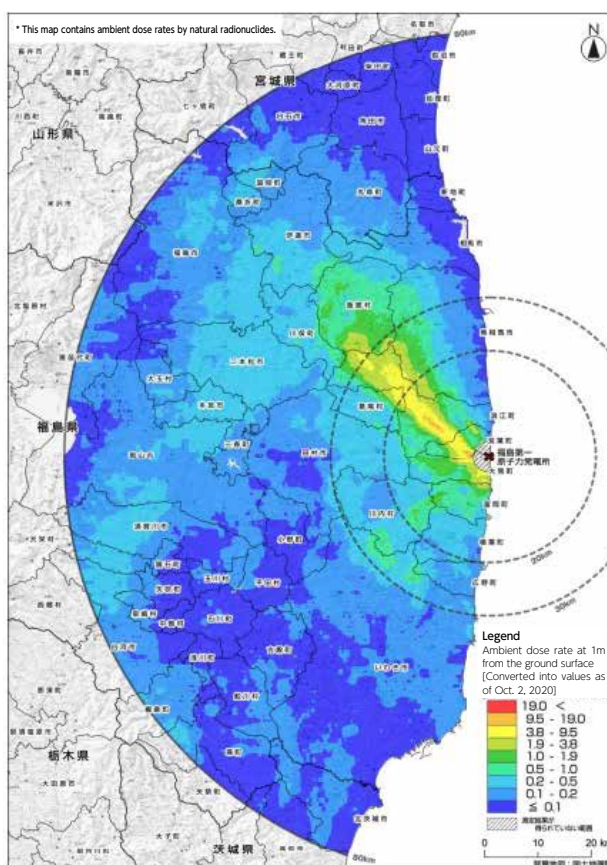
Through the implementation of decontamination efforts and the passage of time, ambient dose rate values in the area surrounding TEPCO's Fukushima Daiichi NPS site have decreased from the levels immediately after the accident.

● Distribution of Ambient Dose Rates within the 80-km Zone of TEPCO's Fukushima Daiichi NPS

● Released by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) on Dec. 16, 2011



● Released by the Nuclear Regulation Authority on Feb. 15, 2021



In order to ascertain the changes in the effect of radioactive materials, an airborne monitoring survey is being conducted continuously within an 80-km radius from TEPCO's Fukushima Daiichi NPS.

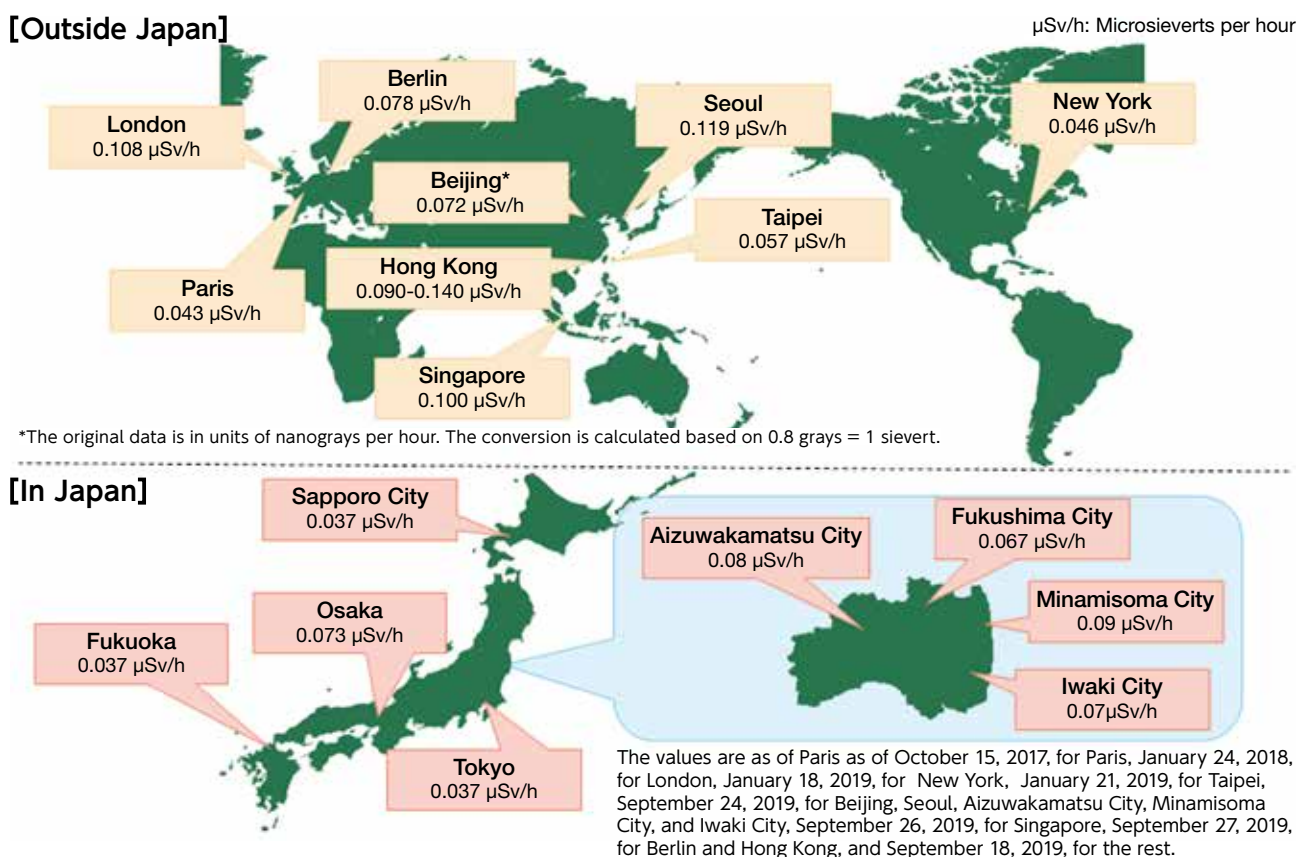
It was confirmed that ambient dose rates within the 80-km zone decreased over time both in areas showing higher dose rates (areas extending to the northwest of the NPS) and areas showing lower dose rates.

For more information about the distribution of ambient dose rates, see page 24 of Vol. 2, FY2022 edition.

(iii) Comparison to other regional ambient dose rates

Comparing the ambient dose rates shown here for 4 municipalities in Fukushima Prefecture and other major cities inside and outside of Japan shows that as a result of decontamination efforts and physical attenuation of radioactive materials, the levels are roughly the same.

Measurement results for ambient dose rates in major cities



Source: Prepared based on data by the Japan National Tourism Organization (<https://www.japan.travel/en/news/post-2011-3-11-general-information/>, as of December 2018)

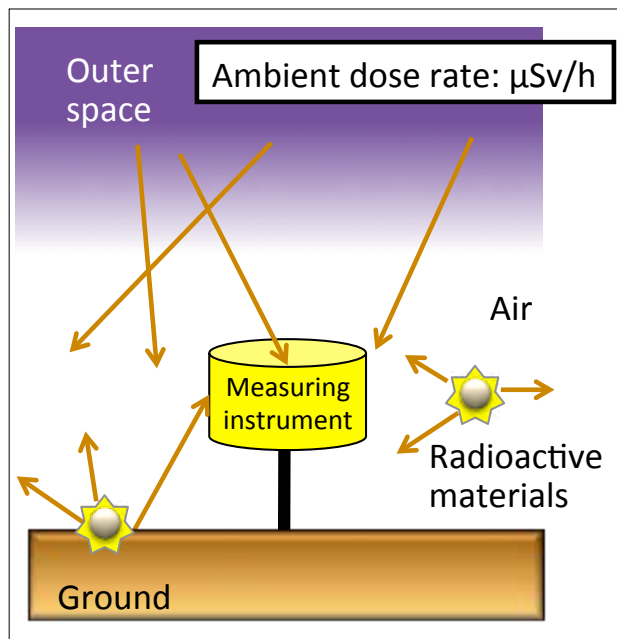
This figure shows ambient dose rate measurements for major cities in Japan and other parts of the world in 2017 or 2018. Radiation dose can be seen to vary by region. This is due to variations in the amount of ground radiation, mainly caused by differences in soil and rock composition.

For more information about ambient dose rate measurement results for major cities, see page 69 of Vol. 1, FY2022 edition.

(iv) A method of measuring ambient dose rates

Ambient dose rates are being measured at the radiation monitoring posts set up in various areas within Fukushima Prefecture. This section will explain how ambient dose rates are measured at the radiation monitoring posts and introduce some other survey meters used for ambient dose rate measurement.

● Ambient dose rate measurement



Ambient dose rate measures γ (gamma) rays in the air. Indicated in microsieverts per hour ($\mu\text{Sv/hr}$)





Actual measuring instrument (radiation monitoring post)

The ambient dose rate is obtained by measuring γ -ray doses in the air, and is indicated in microsieverts per hour. The measured value is not limited to the amount of radiation derived from accidents. Natural radiation mainly comes from the ground and cosmic rays. Normally, a measuring instrument is placed at a height of about 1 m from the ground, because most important internal organs are located at this height in the case of an adult. The height of measuring instruments may be set to 50 cm from the ground in places mainly visited by children, such as schools and pre-schools.

For more information about ambient dose rates, see page 52 of Vol. 1, FY2022 edition.

● Examples of survey meters used for measuring ambient dose rates

| Type | | Purpose | |
|---|---|--|--|
| Ionization chamber survey meter (ionization) |  | γ-ray ambient dose rate | Most accurate but unable to measure low dose rates like a scintillation type can |
| Nal (Tl) scintillation survey meter (excitation) |  | γ-ray ambient dose rate | Accurate and very sensitive; Suitable for measuring γ -ray ambient dose rates from the environment level up to around $10 \mu\text{Sv/h}$ |

For more information about measuring instruments, see page 48 of Vol. 1, FY2022 edition.