

Radiation around Us

Radioactive substances are originally present in the natural world, and we receive some amount of radiation all the time (the average in Japan is 2.1mSv per person per year). We also receive radiation from medical procedures such as CT scans and X-ray imaging. The effect of radiation on the human body occurs when part of the DNA that forms the body of genes within cells is damaged, but most cells either return to normal or are replaced by healthy cells. Therefore, we do not need to think about radiation during our daily lives. However, if we are exposed to more than a certain amount of radiation in a short time, health impacts occur, in acute

Smoking	Equivalent to 1,000 – 2,000 mSv
Obesity ※1	Equivalent to 200 – 500 mSv
Passive smoking ※2	Equivalent to 100 – 200 mSv
Lack of vegetables ※3	Equivalent to 100 – 200 mSv

※1 : The risk for a group with BMI (Body Mass Index, an indicator of obesity calculated from height and weight) ≥ 30 , compared to the risk of the group with BMI 23.0 – 24.9.
 ※2 : The group risk of women whose husbands do smoke, compared to the group of women whose husbands do not smoke.
 ※3 : The risk (median) for a group which consumes 420g of vegetables per day, compared to the risk (median) of the group which consumes 110g per day.

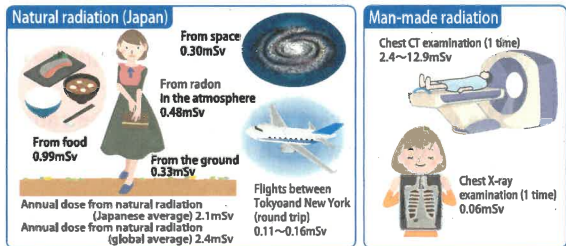
[Table] Comparison of Radiation with Other Carcinogenesis Factors

Reference : Reconstruction Agency "FAQ Concerning Radiation Risks Often Mentioned at Evacuee Briefings etc.", December 25, 2012

forms such as hair loss and bleeding, and there may be a marked increase in cancer risk.

The increase in risk of carcinogenesis due to radiation is so small at low doses of 100mSv or less that it is obscured by the carcinogenesis risks of smoking and other factors, and it is considered difficult to prove a clear increase in cancer risk due to radiation (Figure, Table).

Radiation around Us Exposure dose from natural and man-made radiation



[Figure] Radiation around Us

Reference : Ministry of the Environment "Unified Basic Reference on the Health Impacts of Radiation, 2017 Edition"; Consumer Affairs Agency "Food and Radiation Q&A, 12th edition", March 8, 2018; Reconstruction Agency "FAQ Concerning Radiation Risks Often Mentioned at Evacuee Briefings etc.", December 25, 2012; Cabinet Office, Ministry of Agriculture, Forestry and Fisheries, and others "The Basics of Radiation Risks", revised February 2, 2016

Designation Status of Areas under Evacuation Orders

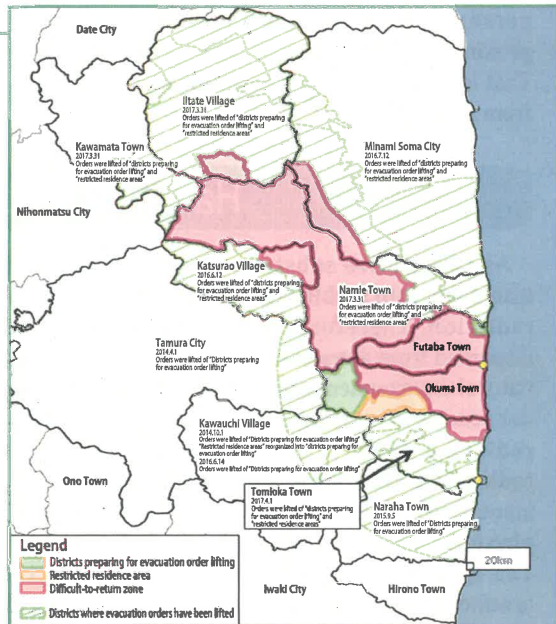
The accident at the Fukushima Daiichi Nuclear Power Plant, caused by the Great East Japan Earthquake, led the national government to issue evacuation orders immediately after the accident, to keep local residents from danger to lives and health due to damage to the reactor and the release and dispersion of radioactive materials. As the severity of the accident deepened, areas under evacuation orders were gradually specified.

When it became clear that the reactors are in a state of cold shutdown, area status was reviewed into the three types, of districts preparing for evacuation order lifting, restricted residence area, and difficult-to-return zones, according to the average annual dose (April 1, 2012). That was a step for making environmental improvements and advancing the recovery and regeneration, towards residents' return. After that, evacuation orders were lifted for the urban parts of Tamura City, Kawauchi Village, Naraha Town (with the exception of some areas), Katsurao Village (with the exception of some areas), Minami Soma City (with the exception of some areas), the Yamakiya district of Kawamata Town, Iitate Village (with the exception of some areas), Namie Town (with the exception of some areas), and Tomioka Town (with the exception of some areas). The districts which residents are allowed to return to have been increasing gradually.

The map shows the current status of areas under evacuation orders.

[District Classifications]

- **Districts preparing for evacuation order lifting**
Districts where rapid support measures for restoration and recovery are conducted, aiming for environmental improvements that will allow residents to return home.
- **Restricted residence area**
Districts where planned decontaminations are conducted, aiming for the future return of residents and the rebuilding of communities, and districts intended for the restoration of infrastructure facilities which are essential for early recovery.
- **Difficult-to-return zone**
Zones where radiation levels are extremely high, so barricades and other physical protection measures have been erected and residents are asked to evacuate.



[Figure] Status of Areas under Evacuation Orders in Fukushima Prefecture (As of April 1, 2017)

Reference: Fukushima Prefecture website "Fukushima Revitalization Station - Status of Areas under Evacuation Orders"; Fukushima Prefecture website "Fukushima Revitalization Station - Status of Areas under Evacuation Orders", "Fukushima Revitalization Station - Commentary on Changes in Evacuation Zones", updated February 28, 2018

<Specific Rebirth and Regeneration Base Districts>

The Amendment to the Act on Special Measure for the Rebirth of Fukushima (May 2017) made it possible to set "Specific Rebirth and Regeneration Base Districts", lifting evacuation orders and allowing residence, within difficult-to-return zones where residence had been restricted over the future.

Mayors of municipalities can set Special Recovery and Regeneration Center Districts, and formulate plans for environmental improvements (such as decontamination and development of infrastructure etc.) in those districts. Such plans are subject to approval by the Prime Minister.

As of August 2018, districts had been approved in six municipalities (the towns of Futaba, Okuma, Namie, and Tomioka, and the villages of Iitate and Katsurao).