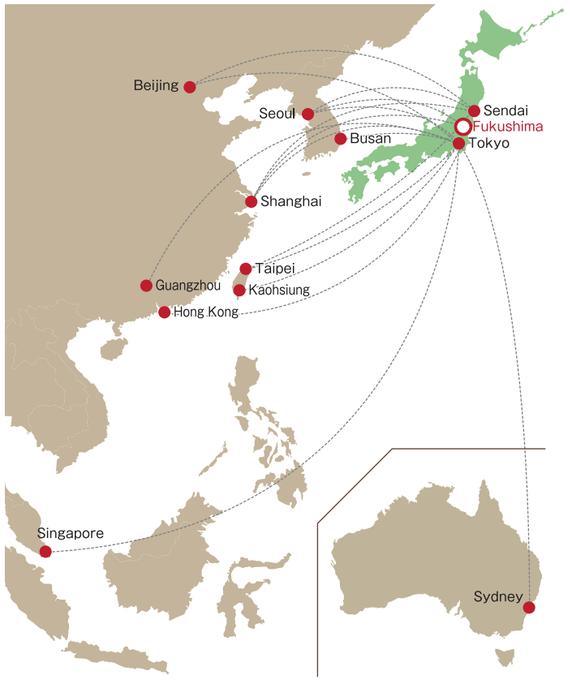
ACCESS TO FUKUSHIMA

International Lines



Shanghai	Approx. 2 hours and 40 minutes	Fukushima
	Approx. 2 hours and 50 minutes	Sendai
	Approx. 2 hours and 35 minutes	Tokyo
Beijing	Approx. 4 hours and 45 minutes	Sendai
	Approx. 3 hours and 15 minutes	Tokyo
Guangzhou	Approx. 3 hours and 50 minutes	Tokyo
Seoul	Approx. 2 hours and 10 minutes	Fukushima
	Approx. 2 hours and 10 minutes	Sendai
	Approx. 2 hours and 10 minutes	Tokyo
Busan	Approx.1 hour and 55 minutes	Tokyo
Taipei	Approx. 3 hours and 15 minutes	Sendai
	Approx. 2 hours and 55 minutes	Tokyo
Kaohsiung	Approx. 3 hours and 30 minutes	Tokyo
Hong Kong	Approx. 4 hours and 5 minutes	Tokyo
Singapore	Approx. 6 hours and 30 minutes	Tokyo
Sydney	Approx. 9 hours and 40 minutes	Tokyo

Domestic Access

By JR

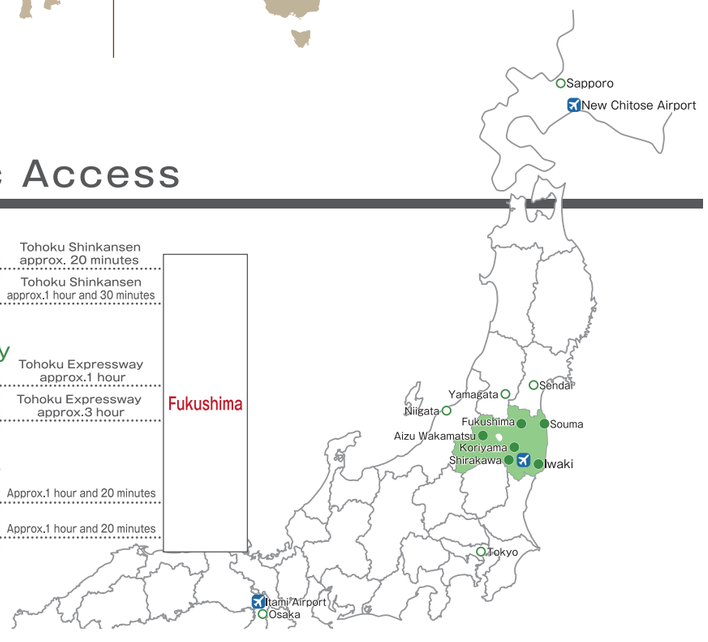
Sendai	Tohoku Shinkansen approx. 20 minutes
Tokyo	Tohoku Shinkansen approx.1 hour and 30 minutes

Expressway

Sendai	Tohoku Expressway approx.1 hour
Tokyo	Tohoku Expressway approx.3 hour

By airplane

Hokkaido (New Chitose Airport)	Approx.1 hour and 20 minutes
Osaka (Itami Airport)	Approx.1 hour and 20 minutes



福島県
Fukushima Prefecture

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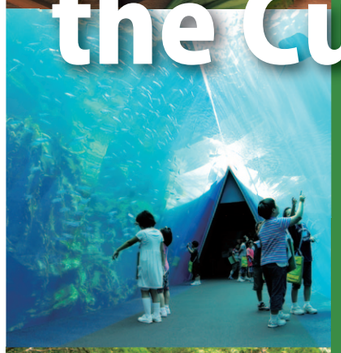
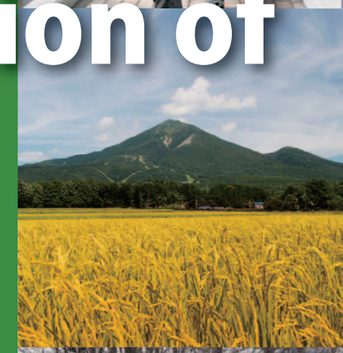
Chief Editor
●Getting to know the current situation of Fukushima “radioactive rays around you”
Noboru Takamura
Advisor of radioactive health and risk management in Fukushima prefecture
Professor,Department of Global Health, Medicine and Welfare,
Atomic Bomb Disease Institute, Nagasaki University



JAPAN
Fukushima

Getting to Know the Current Situation of Fukushima

What is the profoundness should we learn in order to understand Fukushima after the earthquake?



Contents

ふくしまから
はじめよう。
Future From Fukushima.

Getting to Know the Current Situation of Fukushima

ENVIRONMENT

The inexplicable worries held by people about Fukushima prefecture may come from the intricate radioactive rays. You can know the current situation of Fukushima Prefecture by mastering the correct knowledge about radioactive rays.

Radioactive Rays Around You

◆ Radioactive rays in daily life

● Natural radioactive rays and artificial radioactive rays

Natural radioactive rays exist in our daily life. They come from cosmic rays, radon gas in the air or daily foods we ingest. People will be affected more or less by the radioactive rays existing in the nature. And the quantity of natural radioactive rays varies with the geographic locations. There are artificial radioactive rays besides natural radioactive rays. Artificial radioactive rays are mostly used in medical treatment. For example, people will be exposed to radiation of 0.6mSv when having an X-ray in getting gastric X-ray inspection. ICRP suggests that the limit of radioactive rays that is endured by the general public in the daily life shall maintain at less than 1mSv per year. However, having a CT scan will impose you the radiation that exceeds 1mSv.

Differences between radioactive energy, radioactive rays and radioactive

Taking the bonfire as an example

Heat = Radioactive rays
Things that will penetrate through objects like light rays

Fire = Radioactive energy
Capable of emitting radioactive rays

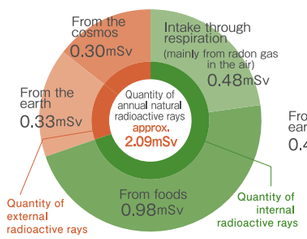
Fire woods = Radioactive materials
Materials which are capable of emitting radioactive rays

Quantity of radioactive rays received from the nature

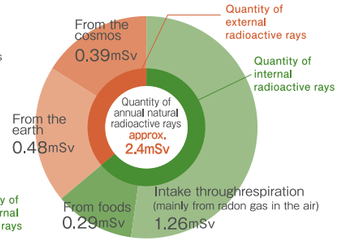
※ Quantity of radioactive rays received by each person per year

Types of natural radioactive rays

〈Average value in Japan〉

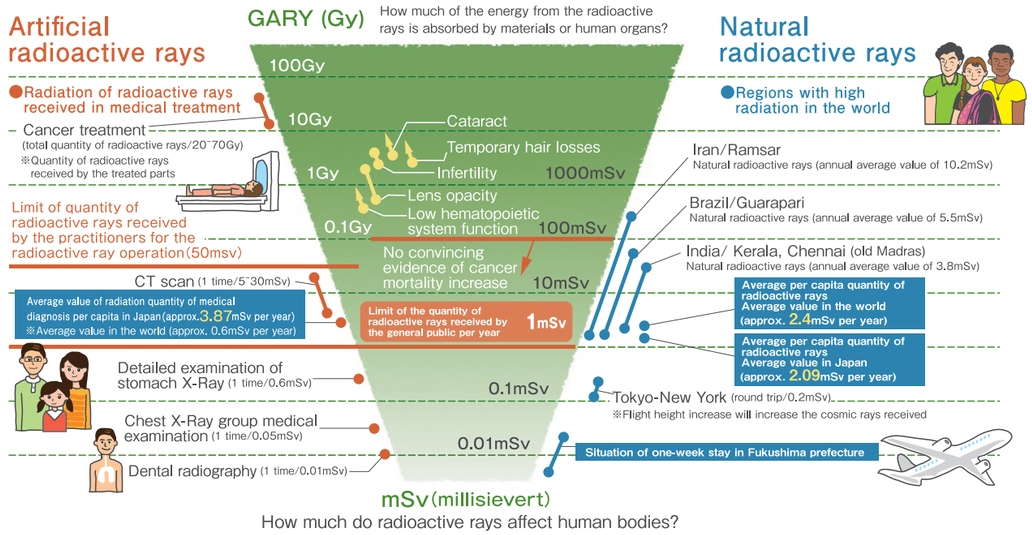


〈Average value in the world〉



[Source]
made according to Report on the Influence of Atom Radioactive Rays released by UNSCEAR in 2008, and (Public) Radioactive Rays in Daily Life (Estimation of the Quantity of Radioactive Rays for Japanese People) New Edition (2011) released by Atomic Energy Safety Research Society.

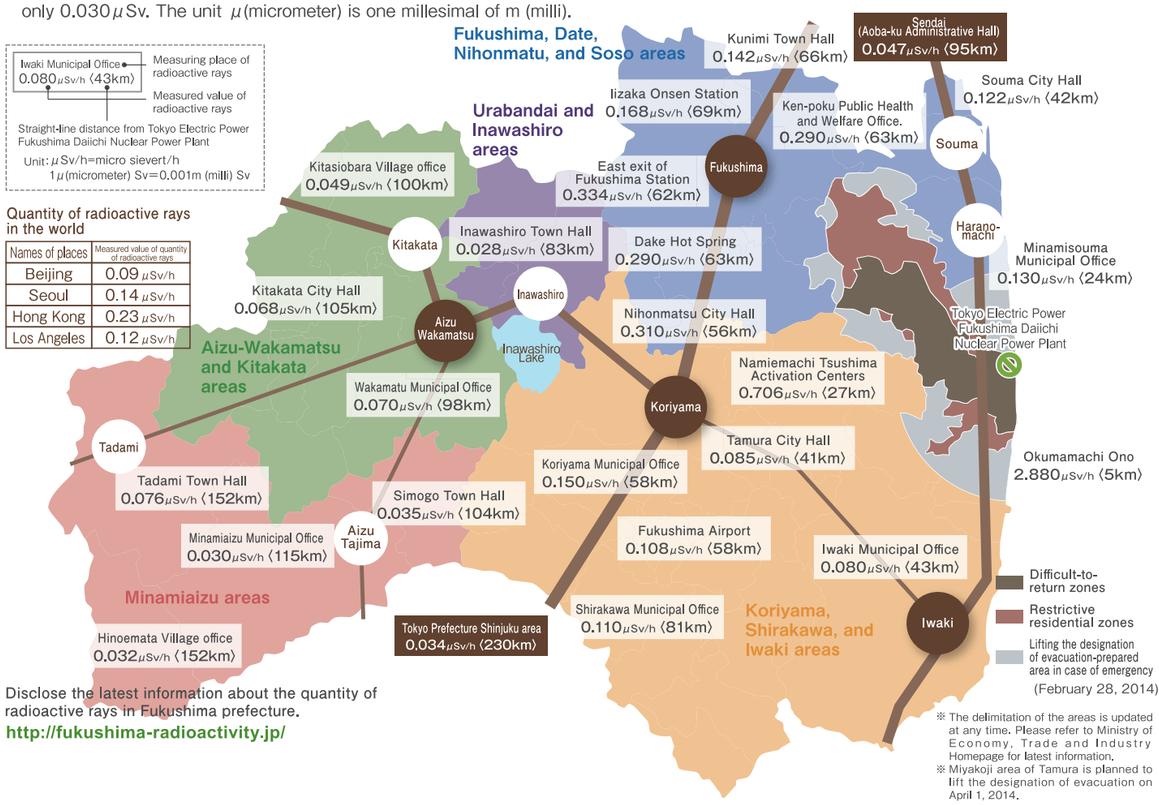
Quantity of radioactive rays and limit of quantity of radioactive rays received in the daily life



[Notice] 1) the value is an approximate number considering the significant figures. 2) the scale (dotted line) uses logarithm to represent. The scale increases one, the value will increase ten times.
[Source] made according to (German) Institute of Radioactive Rays in Medical Sciences, and (Public) Radioactive Rays in Daily Life (Estimation of the Quantity of Radioactive Rays for Japanese People) New Edition (2011) released by Atomic Energy Safety Research Society.

◆ Radioactive ray level in Fukushima prefecture (measured on January 30, 2014)

The quantity of radioactive rays inspected in one hour in Fukushima prefecture measured on January 30, 2014 is shown in the following picture. Fukushima is the third largest prefecture, following Hokkaido and Iwate. Therefore, judging from the distribution of quantity of radioactive rays, there are the regions with high distribution of 2.880μSv near Fukushima Daiichi Nuclear Power Plant, and there are also regions at the same level with Tokyo and Sendai, for instance, the quantity of radioactive rays in Minamiaizu is only 0.030μSv. The unit μ(micrometer) is one millesimal of m (milli).

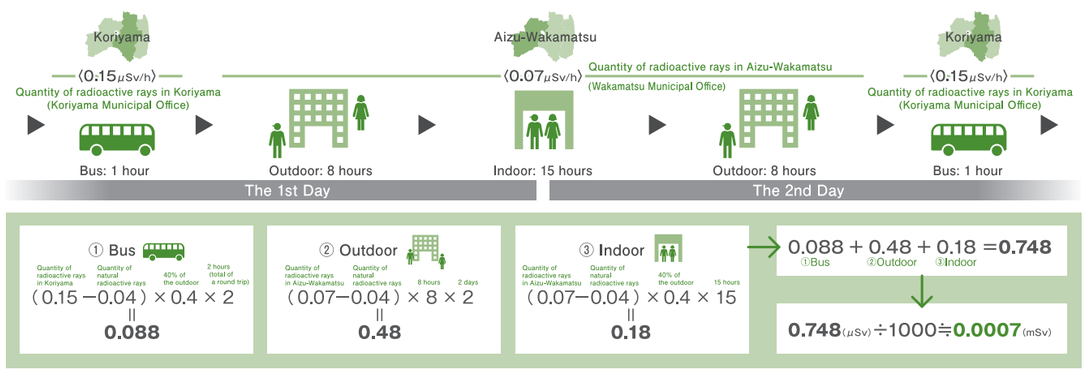


※ The delimitation of the areas is updated at any time. Please refer to Ministry of Economy, Trade and Industry Homepage for latest information.
※ Miyakoji area of Tamura is planned to lift the designation of evacuation on April 1, 2014.

Disclose the latest information about the quantity of radioactive rays in Fukushima prefecture.
http://fukushima-radioactivity.jp/

● What is the additional quantity of radioactive rays during the stay in Fukushima prefecture?

The additional quantity of radioactive rays refers to the value by deducting the natural radioactive rays. For example, let us calculate the additional quantity of radioactive rays during the two-day stay in Aizu-Wakamatsu, the setting for Taiga Drama Double Cherry. Assume the quantity of natural radioactive rays here is 0.04μSv/h, if calculating based on that the indoor quantity of radioactive rays (including buses) is 40% of outdoors, the result would be 0.0007mSv, which is far lower than the standard of 1mSv set forth by Ministry of Education, Culture, Sports, Science and Technology or Ministry of the Environment.



Getting to Know the Current Situation of Fukushima

FOODS

The radioactive materials that are invisible to the naked eye really disturb people. Why can we say “relieved”? It is to make people to understand what we have done to guarantee safety, which will be introduced next.

Basic Knowledge about Foods and Radioactive Rays

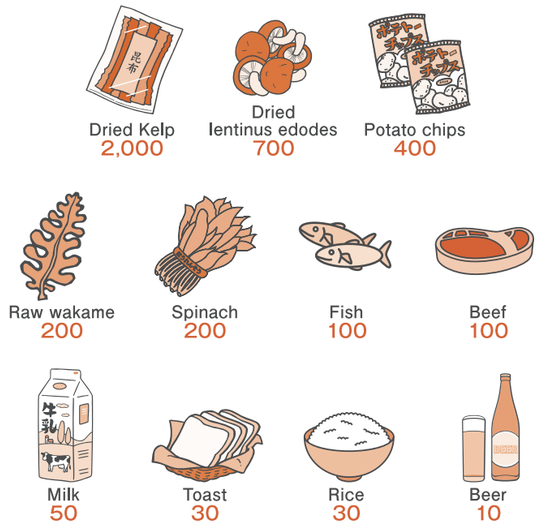



◆ Effect of natural radioactive rays brought by the foods

Foods will bring us effects of natural radioactive rays, one of which is the element K that is indispensable to us. Many foods contain K. The radioactive material K-40 will be ingested as human beings take in foods. Its content inside the human body is quite small, which is only 0.012%. The content of the radioactive material K-40 in foods of 1kg is shown in the picture left below. The radioactivity of the ingested radioactive materials will decrease as time goes by or maintain at a certain proportion through metabolism. As shown in the picture right below, an approximate content of 7,000Bq radioactive materials can be found inside a Japanese weighing 60kg.

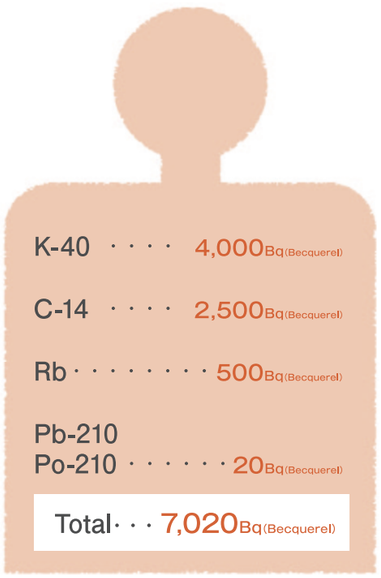
● Content of the radioactive material K-40 in foods of 1kg [Japan]

(Unit: Bq/kg)



[Source] made according to (Public) Atomic Energy Research Society Research on Radioactive Rays Data in the Living Environment (1983)

● Content of radioactive materials inside human body



※Situation of a Japanese weighing 60kg

◆ Food Inspection Mechanism in Fukushima Prefecture (February 28, 2014)

Fukushima prefecture conducted inspection on various stages like food production, manufacturing, processing, circulating, and consumption in accordance with the standard value of the content of the radioactive Cs in foods? “100bq in food/kg (general food)”, to guarantee the safety of foods. Therefore, foods that exceed 100Bq/kg will not be on circulation in the market.

Standard value of the content of the radioactive Cs in foods

Unit : Bq/kg

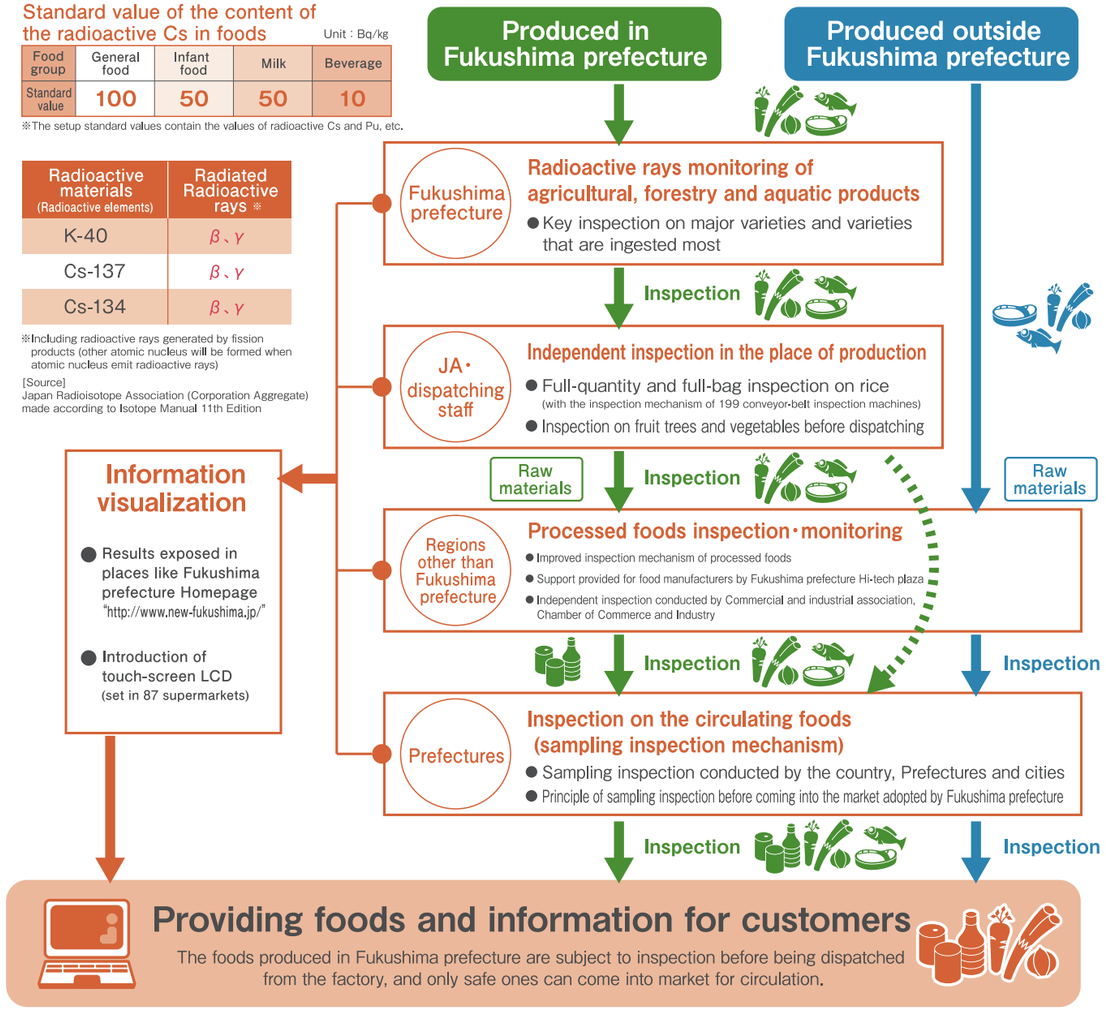
Food group	General food	Infant food	Milk	Beverage
Standard value	100	50	50	10

※The setup standard values contain the values of radioactive Cs and Pu, etc.

Radioactive materials (Radioactive elements)	Radiated Radioactive rays ※
K-40	β、γ
Cs-137	β、γ
Cs-134	β、γ

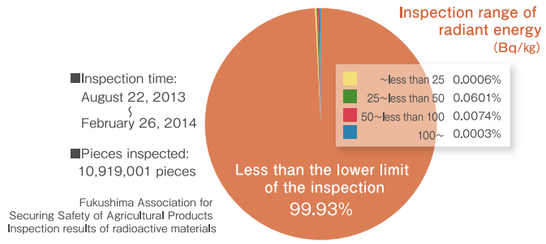
※Including radioactive rays generated by fission products (other atomic nucleus will be formed when atomic nucleus emit radioactive rays)

[Source]
Japan Radioisotope Association (Corporation Aggregate) made according to Isotope Manual 11th Edition



● Results of full-quantity and full-bag inspection on rice [brown rice produced in 2013]

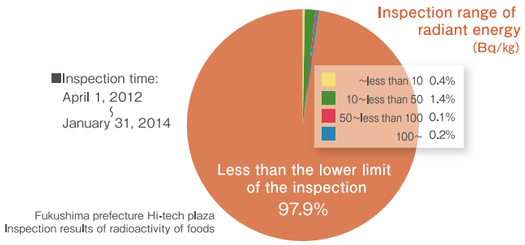
Results of full-quantity and full-bag inspection on rice: the radioactive materials of 99.93% of the brown rice are less than the lower limit of the inspection.



Fukushima Association for Securing Safety of Agricultural Products
Inspection results of radioactive materials

● Inspection results of the processed foods

Inspection results of the processed foods: the radioactive materials of 97.9% of the foods are less than the lower limit of the inspection.



Fukushima prefecture Hi-tech plaza
Inspection results of radioactivity of foods

Radioactive Rays and Radioactive Materials Q&A

ENVIRON-MENT

Answered by

Noboru Takamura

Advisor of Radioactive Health and Risk Management in Fukushima Prefecture

Atomic Bomb Disease Institute, Nagasaki University
Department of Global Health, Medicine and Welfare
Professor

[Professional fields]
International radioactive rays hygienics, radioactive rays influence, molecular epidemiology, hygienics, endocrinology and internal medicine

Q What are differences between the influences of “artificial” and “natural” on health?

A The two are same in property, while the major difference lies in the quantity of radioactive rays.

Radioactive materials include the natural radioactive materials like K-40 and C-14 that have already existed in nature, and artificial radioactive materials like I-131, Cs-137, and Cs-134 that are not found in nature. No matter it is natural or artificial, the same α-ray, β-ray, and γ-ray are emitted by them. It is the level of how much radiation that is exposed by human beings matters, i.e. the quantity of radioactive rays, when considering the influences of their radioactive rays emitted on human health.

Q What’s the meaning of “1mSv” as a standard?

A The generic factor of the cell suffered from one damage. Recover within short period of time.

ICRP suggested that the limit of radioactive rays that is endured by the general public in their daily life shall maintain at less than 1mSv per year. In addition, ICRP also suggested that the quantity of the radioactive rays shall be controlled at the low range of 100~20mSv per year as far as possible in case of the outbreak of radioactive rays. It is said that the one spot of genetic factors inside the cells will suffer from damage when human cells are exposed at 1mSv radioactive rays. However, such damage will not immediately affect human health. Human cells have the function of repairing the damaged genetic factors by themselves. Thus, the damages caused by radioactive rays of 1mSv can be repaired within a short period of time.

Getting to know the current situation of Fukushima

After the East Japan Earthquake, people are always worrying about the influences of the leakage accident of Atomic Power Plant on their health. However, many regions have not been affected by the radioactive rays, where people are leading a normal life.

Foods and Radioactive Materials Q&A

FOODS

Q Are there any dangers that the inside of human bodies would be radiated if continuously ingesting such foods containing radioactive materials?

A A strict safety standard has been set up, therefore even continuous consumption of such foods for one year will not achieve the health damaging level.

The new standard of radioactive Cs in foods of about 1mSv per year that has been set is quite strict in the world. When calculating the quantity of internal radiation rays, assume that foods containing the highest value of such standard are consumed in 1-year time. No risks of internal radiation threatening human health would occur if people consume such food only once or for a whole week. The value of 1mSv is in a safety range which would not threaten human health. Foods on circulation in the market are dispatched after inspection and they are assured to eat. The numerical values of radioactive rays in the foods produced in each area shall be published on Fukushima prefecture homepage, etc. The residents can check the data about radioactive rays in the foods produced in adjacent areas, such as the foods given by friends or foods grown by the residents themselves.

Q Are aquatic products in Fukushima prefecture safe?

A We only sell the aquatic products whose safety can be ensured.

When the leakage accident of Atomic Power Plant occurred, Fukushima prefecture voluntarily stopped the operation activities of inshore fishery and snurrevaad fishery. Since June, 2012, Fukushima prefecture chose those stable Enteroctopus dofleini, Octopus conispadiceus and Buccinum isaotakii whose radioactivity is far lower than the radiation standard value to conduct trial capture based on inspection results obtained from more than 4000 samples of aquatic products and put them in the market. By March 2013, the fish subjects have increased to 13 categories. Japan Cooperative will conduct inspection on these products before dispatching to ensure their safety and quality to eat. In addition, cultured fish like cyprinoid and trout will also be inspected on a regular basis to ensure their safety.