Outline of the Fukushima Health Management Survey

What is Fukushima Prefecture's Fukushima Health Management Survey?

Considering the effects of radiation due to the nuclear disaster, Fukushima Prefecture has been conducting the "Fukushima Health Management Survey" since June 2011 in order to monitor and improve the health of residents for the long term into the future.

The Fukushima Health Management Survey consists of the following five components.

(i) Basic Survey (estimation of external doses) (all residents)

(ii) Detailed Surveys

- **Thyroid Examination** (residents aged around 18 or younger as of March 11, 2011)
- **Comprehensive Health Checkup** (residents of municipalities under evacuation orders)
- **Mental Health and Lifestyle Survey** (residents in Evacuation Areas)
- **Pregnancy and Birth Survey** (pregnant women who have obtained a maternity handbook)

Prepared based on the website of the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University

In the aftermath of the diffusion of radioactive materials from the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS, subsequent evacuations and such, the "Fukushima Health Management Survey" was commenced in Fukushima Prefecture, aiming to improve and maintain the health of the residents of the prefecture into the future by means of understanding their health conditions and linking such data to the prevention and early detection and treatment of diseases, while assessing their radiation doses.

Within the Fukushima Health Management Survey, the Basic Survey was offered to all residents of Fukushima Prefecture to ascertain their external doses during the four months following the accident at the NPS. Additionally, for all residents who were around 18 years old or younger at the time of the accident, the Thyroid Examination has been conducted. The Comprehensive Health Checkup to ascertain physical health conditions and the Mental Health and Lifestyle Survey to ascertain mental health conditions have also been conducted for approximately 210,000 people who were residing in areas designated for evacuation at the time of the accident. Furthermore, the Pregnancy and Birth Survey has been conducted every year for pregnant women who obtained a maternity handbook within Fukushima Prefecture and those who obtained a maternity handbook somewhere else but gave birth in the prefecture.

Included in this reference material on March 31, 2013
Updated on December 1, 2017

Outline of the Fukushima Health Management Survey

Fukushima Health Management Survey (Survey Promotion System)

[Purpose of the Survey]

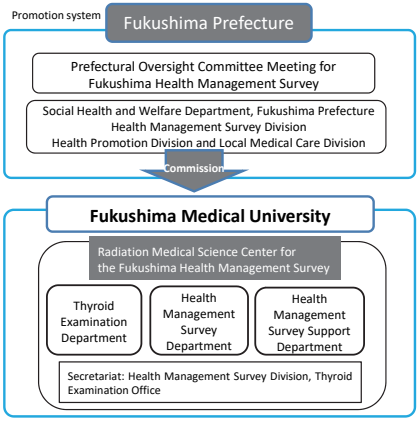
Considering the effects of radiation due to the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS, Fukushima Prefecture has commissioned Fukushima Medical University to conduct the "Fukushima Health Management Survey" for all residents of the prefecture in order to monitor and improve their health for the long term and ensure their safety and peace of mind.

By continuously conducting surveys and health checkups, the Survey aims to achieve the prevention and early detection and treatment of diseases and improve the health of residents into the future, while developing better systems for research, education and medical services.

[Promotion system]

Under guidance and advice from qualified individuals comprising the Prefectural Oversight Committee Meeting for Fukushima Health Management Survey, Fukushima Prefecture and Fukushima Medical University have been jointly conducting the Survey.

Fukushima Medical University established the Radiation Medical Science Center for the Fukushima Health Management Survey in September 2011 and also established the Health Management Survey Division in April 2012 as a dedicated administrative office.



Prepared based on the outline of the "Fukushima Health Management Survey," Fukushima Prefecture

The Fukushima Health Management Survey is being carried out by Fukushima Medical University under commission from Fukushima Prefecture, which serves as the responsible entity. Fukushima Medical University established the Radiation Medical Science Center for the Fukushima Health Management Survey to carry out the Survey.

Fukushima Prefecture set up the Prefectural Oversight Committee Meeting for Fukushima Health Management Survey with the aim of obtaining advice on the Fukushima Health Management Survey from a broad panel of experts.

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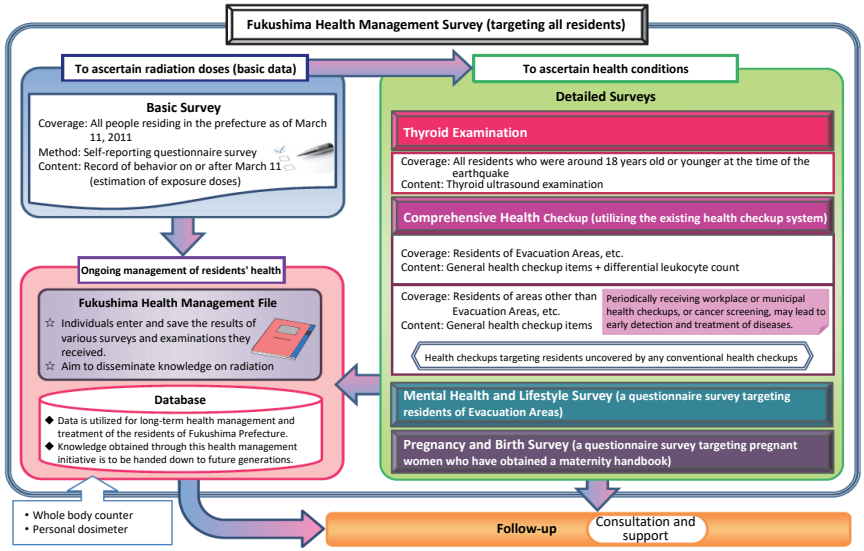
Updated on December1, 2017

Outline of the Fukushima Health Management Survey

Fukushima Health Management Survey (Overview)



Prepared based on the outline of the "Fukushima Health Management Survey," Fukushima Prefecture

The Fukushima Health Management Survey is broadly divided into the Basic Survey and Detailed Surveys.

The Basic Survey was conducted for the purpose of estimating residents' external doses for the four months after the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS based on their behavioral records and obtaining data that is to serve as the basis for monitoring and protecting their health into the future.

The Detailed Surveys are to ascertain residents' present health conditions, as follows:

The first is the Thyroid Examination targeting all residents who were around 18 years old or younger as of March 11, 2011. As cases of thyroid cancer increased among children after the Chernobyl accident, this examination is to be repeated periodically for the applicable participants.

The second is the Comprehensive Health Checkup targeting people who used to reside in Evacuation Areas, being conducted with the aim of achieving the prevention, early detection, and treatment of lifestyle-related diseases that may be caused by changes in their living circumstances.

The third is the Mental Health and Lifestyle Survey, which also targets people from Evacuation Areas. This is for offering support to the disaster victims to ease anxiety and emotional trauma caused by the Great East Japan Earthquake and the accident at the NPS.

The fourth is the Pregnancy and Birth Survey targeting pregnant women who have worries over various things including radiation fears in relation to childbirth and child rearing.

Individuals are encouraged to personally keep records of these surveys and examinations in a Fukushima Health Management File, which is delivered to all residents, and utilize the data for their own health management. Additionally, Fukushima Prefecture compiles all data into a centralized database for the long-term utilization of accumulated knowledge.

Included in this reference material on March 31, 2013
Updated on December 1, 2017

Basic Survey

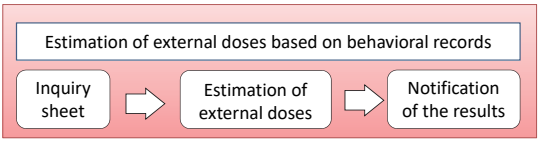
Basic Survey: Purpose

A survey to obtain data that is to serve as the basis for monitoring and protecting residents' health

In order to estimate external doses, individuals were asked to keep and submit a record of their behavior.

Based on collected behavioral records for the four months from March 11 to July 11, 2011, each individual's external dose was estimated using the External Dose Estimation System developed by the National Institute of Radiological Sciences.

[Survey scheme]



Estimated results and the period for estimation are reported to participating individuals to let them know their own external doses, and at the same time, the obtained data are utilized in the Detailed Surveys and individuals' health management to be continued for the long term.

The 4th Expert Meeting on Communications with Nuclear Disaster Victims Regarding Their Health, Ministry of the Environment

The Basic Survey was conducted for the purpose of estimating the level of radiation exposure of people who were residing in Fukushima Prefecture at the time of the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS, and compiling data useful for individuals' health management into the future.

Specifically, inquiry sheets were delivered to the applicable residents to ask them to record their behavior during the four months after the accident. Based on the behavioral records entered in the inquiry sheets, individuals' external doses were estimated using a program developed by the National Institute of Radiological Sciences.

Individuals' estimated external doses were compiled and statistically processed, and have been utilized for analyzing radiation exposure and its health effects in Fukushima Prefecture.

Included in this reference material on March 31, 2013
Updated on December 1, 2017

Basic Survey: Outline

[Period for estimation]

Behavior during the four months from March 11 to July 11, 2011

[Coverage]

Approx. 2.06 million people

- Residents of the prefecture:

  People with residence registration in the prefecture from March 11 to July 1, 2011

- People residing outside the prefecture:

  (1) People who were registered as residents in other prefectures but were residing in the prefecture from March 11 to July 1, 2011

  (2) People residing outside the prefecture who commuted to work or school in the prefecture from March 11 to July 1, 2011

  (3) People residing outside the prefecture who temporarily stayed in the prefecture from Mar. 11 to Mar. 25, 2011

(For people residing outside the prefecture, inquiry sheets were sent upon their request.)

The 4th Expert Meeting on Communications with Nuclear Disaster Victims Regarding Their Health, Ministry of the Environment

The period for surveying behavioral records was the four months from March 11 to July 11, 2011.

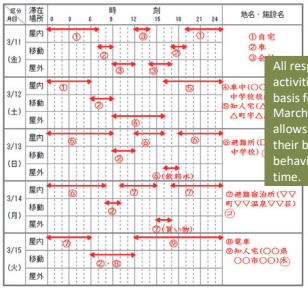
The Basic Survey covered approx. 2.06 million people who were registered as residents of the prefecture at the time of the earthquake. People residing outside the prefecture, for example, those registered as residents in other prefectures, were also covered if they resided, commuted to work or school, or temporarily stayed in the prefecture during this period.

Included in this reference material on March 31, 2013
Updated on March 31, 2017

Basic Survey: Inquiry Sheets

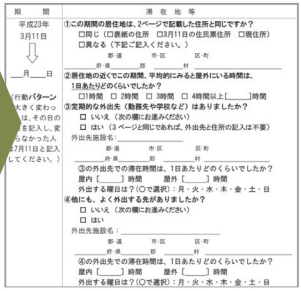
In November 2013, a simplified inquiry sheet was introduced.

● Detailed version (conventional version))



All respondents were asked to record the activities they conducted on an hourly basis for the period from March 11 to March 25, but the simplified inquiry sheet allows some respondents to summarize their behavior and only enter basic behavioral patterns for a certain period of time.

● Simplified version



[Requirements for using the simplified inquiry sheet]

People who have experienced none or only one significant behavioral pattern change (such as a change of residence, school or workplace due to evacuation or moving) in the four months following the earthquake

Examples

1. A person who was residing in Fukushima City at the time of the earthquake, evacuated to Kanagawa on March 15 and continued staying in Kanagawa until July 11 — Moved once → **Simplified version**
2. A person who was residing in Fukushima City at the time of the earthquake, evacuated to Aizuwakamatsu on March 18 but returned to Fukushima City on June 10 — Moved twice → **Detailed version**

Prepared based on the website of the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University, "Information on the Fukushima Health Management Survey"

The original inquiry sheet for the Basic Survey required respondents to record the activities they conducted on an hourly basis for the period from March 11 to March 25. In response to complaints concerning the difficulty in filling in the sheet, a simplified version was introduced in November 2013.

However, in order to maintain the accuracy of the survey, there are requirements for using the simplified inquiry sheet. Only those who have experienced none or only one significant change in their living place due to evacuation or moving, etc. in the four months following the earthquake are allowed to use it.

Included in this reference material on March 31, 2013
Updated on March 31, 2016

Basic Survey

Basic Survey: Analysis Methods
(Behavioral Pattern Survey and Dose Rate Map)

Behavioral pattern survey

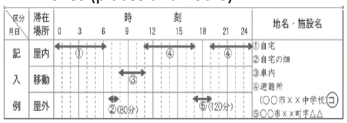
Examine behavioral patterns based on inquiry sheets of the Fukushima Health Management Survey

Survey period

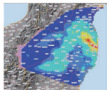
Four months from March 11 to July 11, 2011

Surveyed items

- Stays (places, hours and building structures)
- Moves (places and hours)



Dose rate maps



Prepare maps showing average daily effective dose rates based on data of SPEEDI and the Ministry of Education, Culture, Sports, Science and Technology (MEXT)

- March 12 to 14 — Evaluation results by SPEEDI (effective dose rates)
- From March 15 onward — Monitoring data released by MEXT (at that time) (ambient dose equivalent rates)

Convert ambient dose equivalent rates to effective dose rates by multiplying by 0.6

- Divide into 2 km × 2 km grids
- Interpolate discrete data using software to create a map

* Values of natural radiation are not included.

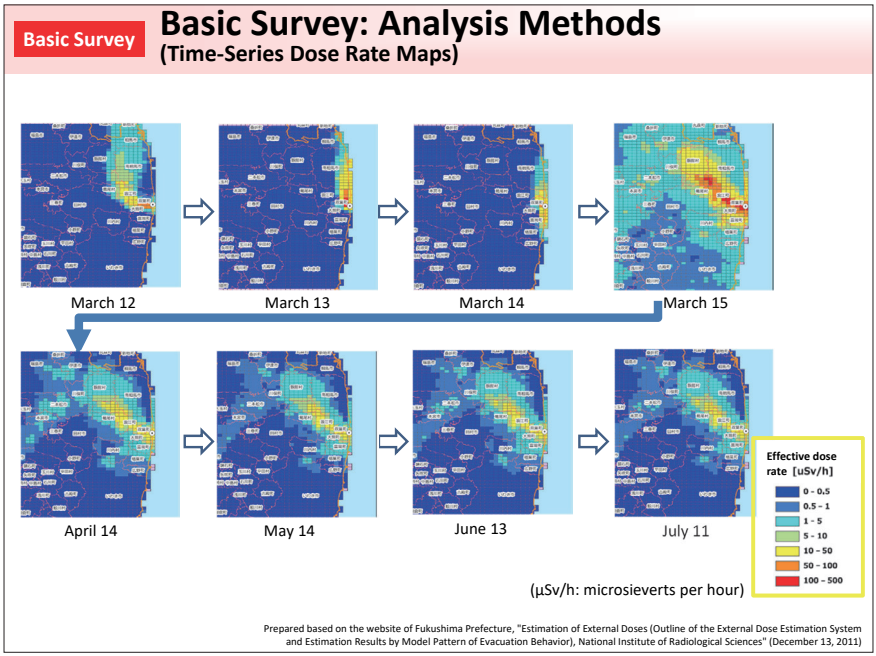
Calculation of cumulative effective doses

Evaluate effective doses based on behavioral patterns and dose rate maps

Prepared based on the website of Fukushima Prefecture, "Estimation of External Doses (Outline of the External Dose Estimation System and Estimation Results by Model Pattern of Evacuation Behavior), National Institute of Radiological Sciences" (December 13, 2011)

In the Basic Survey, external doses were evaluated combining the results of the behavioral pattern survey and the created dose rate maps. The evaluation was conducted based on dose rate maps and behavioral records entered by respondents, such as where and how long they stayed in buildings, and the type of buildings where they stayed, during the survey period.

Included in this reference material on March 31, 2013
Updated on March 31, 2016



Dose rate maps used here are the monitoring data released by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) (at that time).*

* For the three days from March 12 to March 14, which are included in the period (March 12 to March 15, 2011) during which the monitoring data released by MEXT (at that time) is not available, calculation results by SPEEDI (System for Prediction of Environmental Emergency Dose Information) using the data on radioactive material discharge released by the Nuclear and Industrial Safety Agency (at that time) in June 2011 were applied. Data for March 15 was assumed to be the same as that for March 16, and from March 16 onward, the monitoring data released by MEXT (at that time) was used.

Included in this reference material on March 31, 2013
Updated on March 31, 2016

Basic Survey

Basic Survey: Responses

The response rate was 27.6% for the entirety of Fukushima Prefecture

Table 1 Responses to the Basic Survey

As of June 30, 2017

Coverage		2,055,258	
Number of responses	Detailed version	493,584	24.0%
	Simplified version	73,189	3.6%
	Total	566,773	27.6%

* Response rates are rounded off for each category.

Table 2 Response rate by age bracket As of Jun. 30, 2017

Age bracket	0-9	10-19	20-29	30-39	40-49	50-49	60-	Total
Response rate	46.6%	35.8%	18.1%	24.7%	22.4%	23.0%	27.9%	27.6%

Material for the 28th Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

During the survey period, i.e., the four months from March 12 to July 11, 2011, ambient dose rates were especially high and ascertaining people's external doses during this period is most important.

Approx. 566,773 people have made responses so far (response rate: 27. 6%).

Thanks to the introduction of the simplified inquiry sheet and assistance for filling in the inquiry sheet offered at venues of the Thyroid Examination, the response rate improved, mainly among young people.

Included in this reference material on March 31, 2013
Updated on December 1, 2017

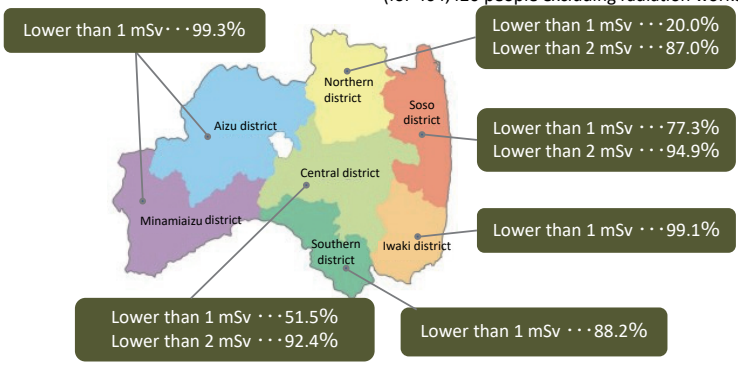
Basic Survey

Basic Survey: Results

Latest Survey Results: http://www.pref.fukushima.lg.jp/site/portal/kenkocyosa-kentoiinkai.html (in Japanese)

Results of estimated external effective doses by district

(for 464,420 people excluding radiation workers)



Evaluation of estimated effective doses

Past epidemiological studies have not confirmed clear health effects of radiation below 100 mSv. Therefore, the estimated external effective doses, though covering only four months, can be evaluated as values that are unlikely to show any health effects caused by radiation.

Prepared based on the material for the 28th Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

Out of a total of 552,298 people for whom external effective doses have been estimated by June 30, 2017, a total of 473,605 people submitted records of their behavior for the entirety of the four-month period for estimation. The figure above shows the estimation results of 464,420 people, excluding those who had engaged in radiation work, by district. As shown in the figure, people for whom estimated external effective doses were lower than 1 mSv accounted for 88.2% in the southern district, 99.3% in the Aizu and Minamiaizu districts, 77.3% in the Soso district, and 99.1% in the Iwaki district. The maximum value was 25 mSv estimated for a person residing in the Soso district.

Included in this reference material on March 31, 2013
Updated on December 1, 2017

Basic Survey

Basic Survey: Examination on the Representativeness of Dose Distribution

Latest Survey Results: http://www.pref.fukushima.lg.jp/site/portal/kenkocyosa-kentoiinkai.html (in Japanese)

[Purpose]

In light of the fact that the response rate of the Basic Survey was approximately 27%, this examination aims to ascertain whether the dose distribution based on the data obtained so far through the Basic Survey correctly reflects the actual status for all residents of the prefecture and is not biased (representativeness of the dose distribution).

[Method]

In FY2015, a group of people was selected at random for each of the seven districts in the prefecture, and the selected people were classified into those who had already responded to the Basic Survey and those who had not in each district. Staff visited people who had not responded to the Basic Survey to ask them to make responses, and a comparison was made between estimated doses for these people and estimated doses for people who had responded to the Basic Survey earlier.

[Results]

In each district, the dose distribution based on the data obtained so far was found to be unbiased and to properly represent respective districts.

Prepared based on the material for the 22nd Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

< Method >

In FY2015, a group of people was selected at random for each of the seven districts in the prefecture, and the selected people were classified into those who had already responded to the Basic Survey and those who had not in each district. Staff visited people who had not responded to the Basic Survey to ask them to make responses, and a comparison was made between estimated doses for these people and estimated doses for people who had responded to the Basic Survey earlier.

For districts with wider dose distribution being ascertained so far, a larger number of people were selected at random.

A statistical comparison was made between estimated doses for people who had responded to the Basic Survey earlier and those for people who had not responded to the Basic Survey but provided responses upon this door-to-door examination.

< Results >

As a result of a statistical analysis, average doses for both groups (people who had responded to the Basic Survey earlier and people who provided responses upon this door-to-door examination) differ only by ±0.25 mSv at the most and it was found that estimated external doses for both groups were at the same level.

See the following website for details:
① -5 and ① -6: http://www.pref.fukushima.lg.jp/uploaded/attachment/151271.pdf (in Japanese)

Included in this reference material on March 31, 2016
Updated on December 1, 2017

Thyroid Examination

Thyroid Examination: Purpose and Coverage

"We will promote the health of the children in Fukushima for the long term."

[Purpose]

Health effects of radiation due to the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS are considered to be extremely small, taking into consideration the expected internal and external exposure doses.

On the other hand, it has been reported that cases of thyroid cancer increased among children after the Chernobyl accident due to internal exposure to radioactive iodine. Therefore, the Thyroid Examination targeting children has been conducted since October 2011 with the aim of ascertaining their thyroid status and promoting their health for the long term.

[Coverage]

All people of Fukushima Prefecture who were aged zero to 18 as of March 11, 2011 (those born from April 2, 1992, to April 1, 2011) (approx. 368,000 people)

* The Full-scale Screening expanded coverage to include those born from April 2, 2011, to April 1, 2012 (approx. 382,000 people in total).

Prepared based on the website of the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University, "Information on the Thyroid Examination"

It has been reported that cases of thyroid cancer increased among children after the Chernobyl accident due to internal exposure to radioactive iodine. Compared with the Chernobyl accident, the amount of radioactive materials discharged into the environment after the accident in Fukushima was much smaller and estimated internal and external doses of the residents were even smaller. Therefore, it is predicted that there would be no epidemiologically detectable thyroid health risks. However, as concerns remain about effects of radiation due to the accident on children's thyroid glands, the Thyroid Examination has been continued under the framework of the Fukushima Health Management Survey with the aim of ascertaining children's current thyroid status and promoting their health into the future.

Included in this reference material on March 31, 2013
Updated on March 31, 2017

Thyroid Examination

Thyroid Examination: Outline (1/3)

● Coverage and examination plan

	Screening category	Period	Coverage
First examination	**Initial Screening** (In order to ascertain children's thyroid status)	Oct. 2011 - March 2014	Residents who were residing in Fukushima Prefecture at the time of the earthquake and were approximately 18 years old or younger (those born from April 2, 1992, to April 1, 2011)
Second examination	**Full-scale Screening** (In order to make comparison with the results of the Initial Screening)	April 2014 - March 2016	In addition to those covered by the Initial Screening, those born from April 2, 2011, to April 1, 2012
Third examination		April 2016 - March 2018	In principle, those born from April 2, 1992, to April 1, 2012
Fourth examination -		Once every two years until becoming 20 years old, then once every five years after becoming 25 years old, for example, at the ages of 30, 35 and so on	

Prepared based on the website of the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University, "Information on the Thyroid Examination"

Ascertaining the current thyroid status of the relevant group of people even though radiation effects are unlikely to be detected is very important for promoting their health for the long term. Therefore, the Thyroid Examination was conducted for all children in Fukushima Prefecture after the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS over a period of approximately two and a half years from October 2011 (Initial Screening).

Then, in FY2014, the coverage was expanded to include those born from April 2, 2011, to April 1, 2012, and the Full-scale Screening was conducted as the second examination.

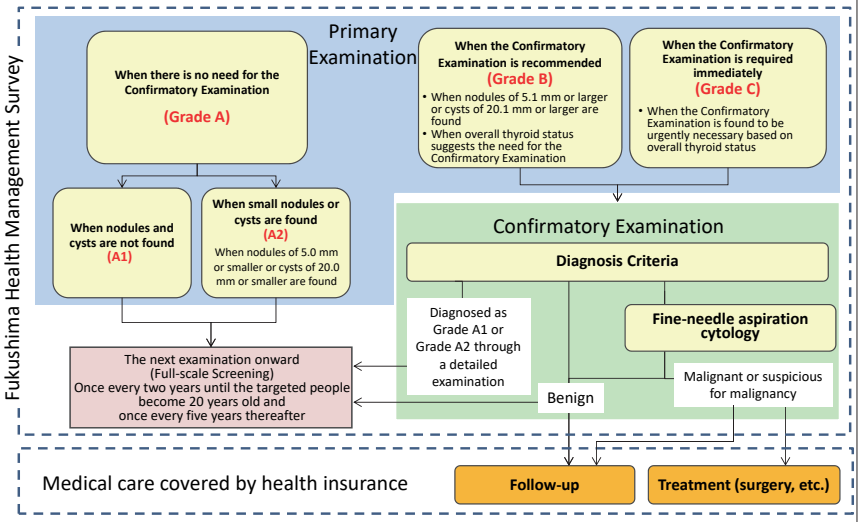
From the third examination onward, the targeted people receive examinations once every two years until they become 20 years old and once every five years thereafter.

Included in this reference material on March 31, 2013
Updated on December 1, 2017

Thyroid Examination

Thyroid Examination: Outline (2/3)

● Examination procedures and diagnosis criteria



Prepared based on the website of the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University, "Information on the Thyroid Examination"

This shows the procedures for the Thyroid Examination.

The Primary Examination checks whether there are any nodules or cysts and measures the sizes thereof, if any. The Confirmatory Examination is recommended to those who are considered to require a more detailed examination.

In the Confirmatory Examination, a more accurate ultrasound examination, plus blood and urine tests are conducted, and fine-needle aspiration cytology is also conducted when a doctor considers it necessary.

The Thyroid Examination is completed at this point.

Then, individuals who are found to require treatment receive it from their regular healthcare provider, under the relevant medical insurance system.

Included in this reference material on March 31, 2016
Updated on December 1, 2017

Thyroid Examination

Thyroid Examination: Outline (3/3)

● Content of the examination

[Primary Examination]

An ultrasound examination assesses whether there are any nodules or cysts. The examination ordinarily finishes in three to five minutes with no pain involved.

The diagnosis panel, consisting of medical specialists, reviews the ultrasound images and makes diagnoses. The examination results are sent by post, but explanations are given at the examination venues or by phone upon examinees' requests.

[Confirmatory Examination]

When a more detailed examination is found to be necessary as a result of the Primary Examination, the Confirmatory Examination is conducted for the relevant person.
In the Confirmatory Examination, another ultrasound examination, plus blood and urine tests are conducted.

If a doctor considers it necessary as a result of these tests, fine-needle aspiration cytology of the thyroid may also be performed and interpreted.

Prepared based on the website of the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University, "Information on the Thyroid Examination"

An ultrasound examination is conducted with an examinee lying on his/her back. A doctor places an ultrasonic probe with jelly on its tip over the examinee's thyroid (located around the base of the neck) and searches for cysts and nodules while moving the probe over the examinee's skin.

The examination ordinarily finishes in three to five minutes with no pain involved.

Definitive diagnoses from the Primary Examination are not made at the venues. In order to make comprehensive and objective judgments, ultrasound images are later reviewed by a panel of medical specialists. This is to ensure a consistently high level of diagnostic accuracy throughout the Fukushima Health Management Survey.

The sizes of nodules and cysts mentioned above are reference values for making diagnoses. If any nodules or cysts found in ultrasound images are suspected to be malignant, the case is designated as Grade B irrespective of the sizes of the nodules or cysts and the Confirmatory Examination is recommended.

In the Confirmatory Examination, a more accurate ultrasound examination, plus blood and urine tests, are conducted. If, as a result of these tests, a doctor considers it necessary, fine-needle aspiration cytology, an examination of a sample tissue taken from the person's thyroid, may also be conducted.

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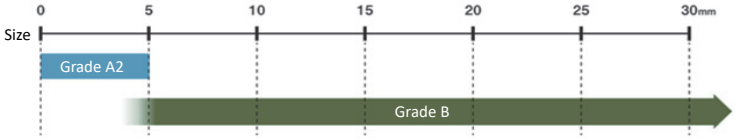
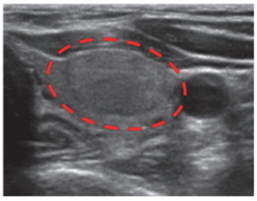
Thyroid Examination

Thyroid Examination: Nodules

A nodule, which might also be called a lump, is an irregular growth of thyroid cells.





- Nodules may be malignant (cancerous), but most are benign.

< Thyroid cancer >

- In many cases, latent thyroid cancer has no symptoms or health effects over a lifetime.
- Latent thyroid cancer is usually small. It may be disadvantageous to force patients to receive treatment if such a cancer is found incidentally.
- Therefore, a detailed examination is not generally conducted for small nodules.

< Thyroid Examination conducted in the Fukushima Health Management Survey>

- The Confirmatory Examination is not conducted for nodules of 5 mm or smaller and follow-ups are to be made at the time of the next examination.
- However, when a detailed examination is found to be necessary, a case with nodules of 5 mm or smaller is diagnosed as Grade B and the Confirmatory Examination is recommended.

Prepared based on the website of the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University, "Q&A on the Thyroid Examination"

A nodule, which might also be called a lump, is an irregular growth of thyroid cells. Some nodules are malignant, but most are benign.

Thyroid cancer has been known as a type of cancer that is latent, that is, having no symptoms or health effects over a lifetime. Thus, detecting all cancers and forcing patients to receive treatment may be sometimes rather disadvantageous, so a detailed examination, such as cytological diagnosis, is not generally conducted for small nodules. In the Thyroid Examination conducted through the Fukushima Health Management Survey, the Confirmatory Examination is not generally performed for nodules of 5 mm or smaller; instead, follow-ups are to be made at the time of the next regularly scheduled ultrasound examination (Primary Examination).

In some cases, a person once diagnosed as Grade A1 is diagnosed as Grade A2 or Grade B in the next examination, or conversely, a person once diagnosed as Grade A2 is subsequently diagnosed as Grade A1.

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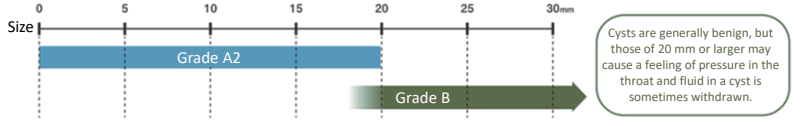
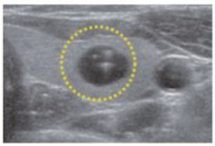
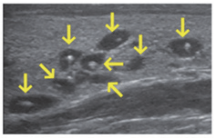
Thyroid Examination

Thyroid Examination: Cysts

A cyst, which resembles a bag filled with fluid, is generally benign, and is often found even in healthy people.







- Cysts often change in size or number.
- Many people have multiple cysts, and the estimated size of the largest one is told to each examinee in this examination.
- Cysts consisting only of fluid and containing no cells are not cancerous.
- Cysts found in the latest examination were all deemed to be benign.
- Cysts are seldom found in babies and infants but are rather found in primary and secondary school students.

Prepared based on the website of the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University, "Q&A on the Thyroid Examination"

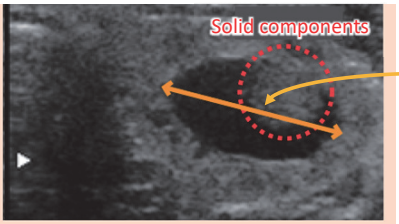
Cysts identified in the Thyroid Examination being conducted in Fukushima Prefecture are considered benign, consisting only of fluid and containing no cells. They are often found even in healthy people, especially among primary and secondary school students. Therefore, repeated examinations often find cysts as children grow up.

Included in this reference material on March 31, 2013
Updated on March 31, 2017

Thyroid Examination

Thyroid Examination: Handling of Cysts with Solid Components

Cysts with solid components are all judged as nodules.



Measure the entirety of a cyst

When the maximum size of a cyst with solid components (the length of the orange arrow) is 5.1 mm or larger, the examinee is diagnosed as Grade B.

- Cysts partially containing solid components (cells) are called cystic nodules or cysts with solid components.
- They are treated as equivalents to ordinary cysts in general medical examinations. Even when the Confirmatory Examination is conducted, they are deemed unlikely to cause problems and are placed under follow-up observations.

Prepared based on the website of the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University, "Q&A on the Thyroid Examination"

Some cysts contain nodules. In the Thyroid Examination conducted in the Fukushima Health Management Survey, those cysts with solid components (nodules) are all judged as nodules and diagnosis criteria for nodules are applied.

For example, a 10 mm-cyst with a 4 mm-nodule is judged as a nodule and diagnosis criteria for nodules are applied. As the size is larger than 5.1 mm, the examinee is diagnosed as Grade B and is advised to receive the Confirmatory Examination.

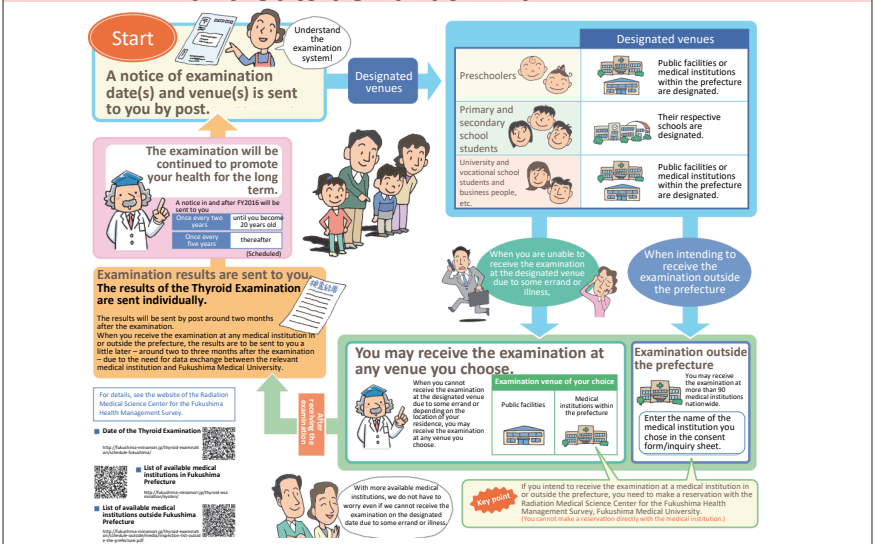
Items judged as fluid-only cysts are considered to be benign.

(Related to P.121, Vol. 2, "Thyroid Examination: Cysts")

Included in this reference material on March 31, 2016
Updated on March 31, 2017

Thyroid Examination

Thyroid Examination: System for Examinations in and outside Fukushima



Prepared based on Thyroid Report No. 3 of the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University

The Thyroid Examination is conducted in collaboration between Fukushima Medical University and medical institutions in and outside Fukushima Prefecture. For more convenience to residents of the prefecture, efforts have been made to increase venues and opportunities with the aim of properly promoting the health of the people in Fukushima Prefecture for the long term.

Included in this reference material on March 31, 2015
Updated on March 31, 2017

Thyroid Examination

Thyroid Examination: Order of Full-scale Screening

The examination has been conducted sequentially, starting in areas where ambient dose rates were highest after the disaster.

- The first Full-scale Screening (the second one after the Initial Screening)
  - (white) Municipalities where the FY2014 Primary Examination was conducted (25 municipalities)
  - (gray) Municipalities where the FY2015 Primary Examination was conducted (34 municipalities)
- The second Full-scale Screening (the third one after the Initial Screening)
  - (white) Municipalities where the FY2016 Primary Examination was conducted (25 municipalities)
  - (gray) Municipalities where the FY2017 Primary Examination was conducted (34 municipalities)

Materials for the 22nd and 24th Prefectural Oversight Committee Meetings for Fukushima Health Management Survey

The Thyroid Examination has been conducted sequentially, starting in areas where ambient dose rates were highest at the time of the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS.

After the first Full-scale Screening, which was the second one after the Initial Screening, notices of the examination have been sent mostly in the same order so that the interval from the Initial Screening would not be prolonged. Since FY2016, the examination for those aged 20 or older has come to be conducted once every five years, but the examination plan is designed so that all targeted people will receive examinations regularly without more than a five-year gap between examinations through age 25.

Included in this reference material on March 31, 2015
Updated on December 1, 2017

Thyroid Examination

Thyroid Examination: Results of the Initial Screening

Latest Examination Results: http://www.pref.fukushima.lg.jp/site/portal/kenkocyosa-kentoiinkai.html (in Japanese)

● Results of the Primary Examination

	Coverage (people)	Examinees (people)		Diagnosis rate (%)	Number of those diagnosed (people)			
		Percentage of examinees (%)	Those who received the examination outside the prefecture		Breakdown by grade (%)			
					A		Those requiring the Confirmatory Examination	
					A1	A2	B	C
Total	367,649	300,473 (81.7)	9,511	300,473 (100.0)	154,605(51.5)	143,574 (47.8)	2,293(0.8)	1 (0.0)

Grade A: 99.2%

● Number and percentage of those having nodules or cysts

	Number of those with determined results (people)	Number of those having nodules or cysts against number of those with determined results (people)			
		Nodules		Cysts	
		5.1 mm or larger	5.0 mm or smaller	20.1 mm or larger	20.0 mm or smaller
Total	300,473	2,275 (0.8)	1,713 (0.6)	12 (0.0)	143,899 (47.9)

Grade B

* Even when nodules were 5.0 mm or smaller or cysts were 20.0 mm or smaller, the relevant examinee may be diagnosed as Grade B depending on other factors.

● Results of the Confirmatory Examination

	Coverage (people)	Examinees (people)	Determination rate (%)	Number of those with determined results (people)			
				Next examination		Regular healthcare program, etc.	
		Percentage of examinees (%)		A 1	A 2		Those who received fine-needle aspiration cytology
Total	2,293	2,130 (92.9)	2,090 (98.1)	132 (6.3)	579 (27.7)	1,379 (66.0)	547 (39.7)

● Results of the fine-needle aspiration cytology

Malignant or suspicious for malignancy: 116 people; 39 males and 77 females

Average age: 17.3 ± 2.7 years old (8 to 22 years old); At the time of the earthquake: 14.9 ± 2.6 years old (6 to 18 years old)

Average tumor size: 13.9 ± 7.8 mm (5.1 to 45.0 mm)

● Out of 116 people whose tumors were diagnosed as malignant or suspicious for malignancy, 102 people had surgery (benign nodule: 1; papillary cancer: 100; poorly differentiated cancer: 1).

Prepared based on the material for the 27th Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

These are the final results of the Initial Screening, which was the very first Thyroid Examination. Examinees diagnosed as Grade A in the Primary Examination accounted for 99.2% of the total, while those diagnosed as Grade B accounted for 0.8%. It became clear that most of those diagnosed as Grade A2 had cysts of 20 mm or smaller and that those diagnosed as Grade B had nodules of 5.1 mm or larger.

In the Confirmatory Examination, as a result of a more accurate ultrasound examination and other tests, 34%, or approximately one out of three who received the Confirmatory Examination, were diagnosed as being equivalent to Grade A and were recommended to receive the next periodic examination in the same manner as those diagnosed as Grade A in the Primary Examination. This is because those who were suspected to have any abnormalities were diagnosed as Grade B just to be safe in the Primary Examination, and such people include those eventually diagnosed as Grade A in the Confirmatory Examination as a result of comprehensive and objective judgments through a more detailed examination, etc.

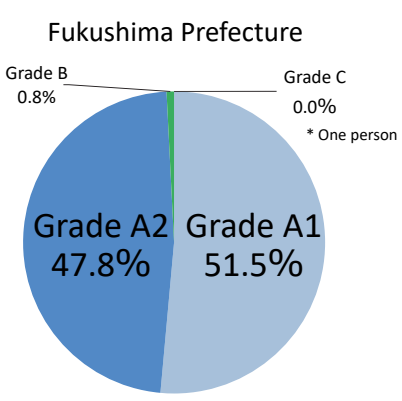
Among the examinees receiving the Confirmatory Examination, 66% were shifted to ordinary medical care covered by health insurance and most of them have been advised to receive another thyroid examination six months to one year later, as determined by the responsible doctor, based on individual findings and circumstances.

Furthermore, 39.7% received fine-needle aspiration cytology, and out of 116 examinees whose tumors were diagnosed as malignant or suspicious for malignancy, 102 had surgery. It is not that all patients whose tumors are diagnosed as malignant or suspicious for malignancy have surgery. Whether to have surgery or not is decided depending on the individuals' situations on a case-by-case basis through consultations among doctors in charge, patients themselves, and their families.

Included in this reference material on March 31, 2016
Updated on December 1, 2017

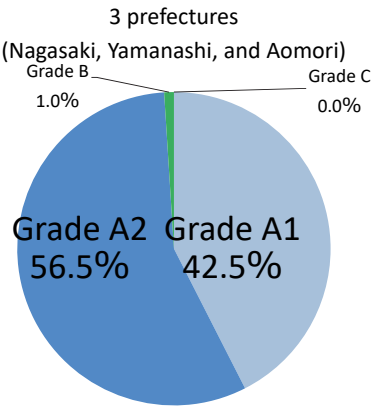
Thyroid Examination

Thyroid Examination: Comparison between the Initial Screening and the Examination in Other Prefectures



300,476 residents of Fukushima Prefecture who were aged 18 or younger at the time of the earthquake

Prepared based on the material for the 20th Prefectural Oversight Committee Meeting for Fukushima Health Management Survey



4,365 children ranging from kindergarteners to high school students in Nagasaki, Yamanashi and Aomori Prefectures (young children aged under 3 were not covered)

Prepared based on the "Survey Results on Detection Rates of Thyroid Abnormalities in the Examination in Three Prefectures Other than Fukushima Prefecture" (March 29, 2013) released by the Ministry of the Environment

When the Thyroid Examination commenced, many people were concerned about a relatively high percentage of examinees diagnosed as Grade A2. Therefore, in FY2012, the Ministry of the Environment (MOE) conducted the Thyroid Examination targeting approx. 4,300 children in Nagasaki, Yamanashi and Aomori Prefectures (3-prefecture examination) in the same manner as the examination conducted in Fukushima Prefecture.

The examination in Fukushima Prefecture covered children aged zero to 18, while the 3-prefecture examination excluded children aged under 3 and covered only those aged 3 to 18. As the cohort was much smaller in the 3-prefecture examination, a simple comparison cannot be made, but the results show that those diagnosed as Grade A2 were not greater in number among the children of Fukushima Prefecture. The figures above show that the percentage of those diagnosed as Grade A2 in Fukushima Prefecture was actually smaller by 9 points than in the three prefectures and, conversely, the percentage of those diagnosed as Grade A1 was larger by 9 points. The report of the 3-prefecture examination made the following observations: "It is generally known that the detection rate of nodular lesions is lower in the group of examinees aged 3 to 5 than in the group of examinees aged 6 or older, and that females show higher detection rate than males. Therefore, there is the possibility that a detection rate tabulated based on simple descriptive statistical methods as in this case may be higher than the actual rate."* The gaps in the percentages of those diagnosed as Grade A1 and Grade A2 between the examination in Fukushima Prefecture and the 3-prefecture examination are considered to be due to differences in the cohort sizes and examinees' ages (the 3-prefecture examination excluded children aged under 3).

* Source: "Report on the Outcome of the FY2012 Survey on Detection Rates of Thyroid Abnormalities" (commissioned by MOE), The Japan Association of Breast and Thyroid Sonology (March 2013)

Included in this reference material on March 31, 2014
Updated on December 1, 2017

Thyroid Examination

Thyroid Examination: Results of the Full-scale Screening (2nd Examination)

Latest Examination Results: http://www.pref.fukushima.lg.jp/site/portal/kenkocyosa-kentoiinkai.html (in Japanese)

● Results of the Primary Examination

	Coverage (people)	Examinees (people)		Diagnosis rate (%)	Number of those diagnosed (people)			
		Percentage of examinees (%)	Those who received the examination outside the prefecture		Breakdown by grade (%)			
					A		Those requiring the Confirmatory Examination	
					A 1	A 2	B	C
Total	381,256	270,516(71.0)	15,647	270,515 (100.0)	108,710(40.2)	159,578(59.0)	2,227(0.8)	0 (0.0)

Grade A: 99.2%

● Number and percentage of those having nodules or cysts

	Number of those with determined results (people)	Number of those having nodules or cysts against number of those with determined results (%)			
		Nodules		Cysts	
		5.1 mm or larger	5.0 mm or smaller	20.1 mm or larger	20.0 mm or smaller
Total	270,515	2,219(0.8)	1,570(0.6)	6 (0.0)	160,357(59.3)

Grade B

* Even when nodules were 5.0 mm or smaller or cysts were 20.0 mm or smaller, the relevant examinee may be diagnosed as Grade B depending on other factors.

● Results of the Confirmatory Examination

	Coverage (people)	Examinees (people)	Determination rate (%)	Number of those with determined results (people)			
		Percentage of examinees (%)		Next examination		Regular healthcare program, etc.	
				A1	A2		Those who received fine-needle aspiration cytology
Total	2,227	1,844(82.8)	1,788(97.0)	63(3.5)	360(20.1)	1,365(76.3)	205(15.0)

* The total of percentages with one decimal place may not be 100% due to rounding.

● Results of the fine-needle aspiration cytology

Malignant or suspicious for malignancy: 71people; 32 males and 39 females
Average age: 16.9 ± 3.3 years old (9 to 23 years old); At the time of the earthquake: 12.6 ± 3.3 years old (5 to 18 years old)
Average tumor size: 11.1 ± 5.7 mm (5.3 to 35.6 mm)

● Out of 71 people whose tumors were diagnosed as malignant or suspicious for malignancy, 50 people had surgery (papillary cancer: 49; other types of thyroid cancer: 1).

Prepared based on the material for the 28th Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

These are the interim results of the Full-scale Screening, which was the second round of the Thyroid Examination.

Examinees diagnosed as Grade A in the Primary Examination accounted for 99.2% of the total, while those diagnosed as Grade B accounted for 0.8%. Most of those diagnosed as Grade A2 had cysts of 20 mm or smaller and those diagnosed as Grade B had nodules of 5.1 mm or larger. This tendency was the same as that observed in the Initial Screening.

In the Confirmatory Examination, as a result of fine-needle aspiration cytology, 71examinees were diagnosed that their tumors were malignant or suspicious for malignancy.

Included in this reference material on March 31, 2016
Updated on December 1, 2017

Thyroid Examination

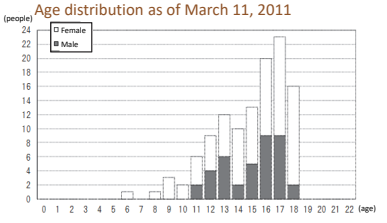
Thyroid Examination: Results of the Initial Screening and the Full-scale Screening (Details of Fine-needle Aspiration Cytology)

Latest Examination Results: http://www.pref.fukushima.lg.jp/site/portal/kenkocyosa-kentoiinkai.html (in Japanese)

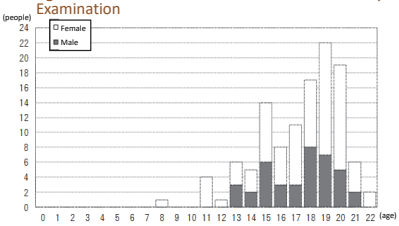
- Age distribution of examinees whose tumors were diagnosed as malignant or suspicious for malignancy as a result of fine-needle aspiration cytology

Results of the Initial Screening (116 examinees)

Age distribution as of March 11, 2011

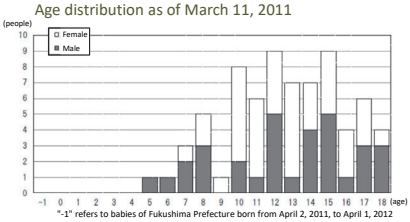


Age distribution as of the time of the Confirmatory Examination



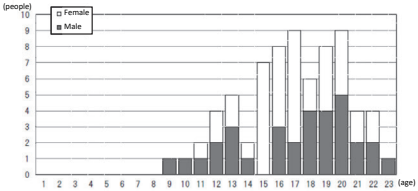
Results of the Full-scale Screening (2nd examination) (71 examinees)

Age distribution as of March 11, 2011



"-1" refers to babies of Fukushima Prefecture born from April 2, 2011, to April 1, 2012

Age distribution as of the time of the Confirmatory Examination



Materials for the 27th and 28th Prefectural Oversight Committee Meetings for Fukushima Health Management Survey

These graphs show the age distribution, as of March 11, 2011, of examinees who subsequently had thyroid lesions diagnosed as malignant or suspicious for malignancy by fine-needle aspiration cytology, and their ages at the time of the Confirmatory Examination. So far, the situation is that thyroid cancer is not found more frequently among young children (aged zero to 5), who are considered to have higher sensitivity to radiation, than among people in the other age brackets.

These are only interim results and will be updated later.

Included in this reference material on March 31, 2014
Updated on December 1, 2017

Thyroid Examination

Thyroid Examination: Remarks on the Results of the Initial Screening

● The Thyroid Examination, which had no precedent for childhood screening, revealed thyroid cancers that might have otherwise gone unnoticed.

Percentage of examinees whose tumors were diagnosed as malignant or suspicious for malignancy as a result of fine-needle aspiration cytology (against the total examinees of the Primary Examination)

FY2011	FY2012	FY2013
0.03%	0.04%	0.04%

Material for the 20th Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

● Evaluation of thyroid cancers found in the Initial Screening, the Interim Report by the Prefectural Oversight Committee Meeting for Fukushima Health Management Survey (March 2016)

"Comprehensively considering that: exposure doses due to the accident at the Fukushima Daiichi NPS were generally lower than those caused by the Chernobyl accident; the period of time from the exposure to the detection of cancers is short (mostly from one to four years); cancers have not been detected in those aged 5 or younger at the time of the accident; and there is no significant regional difference in detection rates, it can be concluded that thyroid cancers found so far through the Thyroid Examination cannot be attributed to radiation discharged due to the accident.

However, the possibility of radiation effects may be small but cannot be completely denied at this point in time. Additionally, it is necessary to accumulate information in the long term for accurate evaluation of the effects. Therefore, the Thyroid Examination should be continued, while meticulously explaining the disadvantages of receiving the examination and obtaining the understanding of examinees."

○The United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) reiterated in its 2015 White paper* that excessive thyroid cancer risks due to radiation exposure do not need to be taken into consideration.

*Developments since the 2013 UNSCEAR Report on the levels and effects of radiation exposure due to the nuclear accident following the great east-Japan earthquake and tsunami (A 2015 White Paper to guide the Scientific Committee's future programme of work)

In order to ascertain radiation effects, it is necessary to monitor developments over a long term. Please receive the examination continuously from the viewpoint of managing your own health as well.

Thyroid cancers found so far through the Thyroid Examination being conducted in Fukushima Prefecture are considered to be unrelated to the radiation discharged due to the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS.

This evaluation is based on a comprehensive judgment of the following facts:

(i) Exposure doses due to the accident at the Fukushima Daiichi NPS were generally lower compared with those caused by the Chernobyl accident.

(ii) The period of time from the exposure to the detection of cancers is short, mostly from one to four years.

(iii) Cancers have not been detected in those who were 5 years old or younger at the time of the accident.

(iv) Age distribution of patients significantly differs in Fukushima Prefecture and Chernobyl (p.132 of Vol. 1, "Comparison between the Chernobyl Accident and the Accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS (Ages at the Time of Radiation Exposure)").

(v) There are no significant differences in detection rates among different regions.

However, it is necessary to monitor developments over a long term to ascertain radiation effects, so the Thyroid Examination program should continue.

Included in this reference material on March 31, 2015
Updated on March 31, 2017

Comprehensive Health Checkup

Comprehensive Health Checkup: Purpose

“We will promote the health of the residents who were forced to evacuate."

Due to the Great East Japan Earthquake and the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS, many of the residents of Fukushima Prefecture were forced to evacuate and face drastic changes in their daily lives. Accordingly, many may have also experienced significant changes in their diet, exercise, or other lifestyle factors or have had difficulty in receiving medical checkups, and are worried about their own health.

Fukushima Prefecture has been conducting health checkups for people who were residing in Evacuation Areas, such as Restricted Areas, designated by the national government as of 2011 ("covered areas"), considering it necessary to ascertain the overall health conditions of the residents, not limited to the health effects caused by their anxieties over radiation and prolonged refugee life, and to utilize the obtained data for the prevention and early detection and treatment of lifestyle-related diseases, thereby promoting and maintaining the good health of the residents.

Prepared based on the website of the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University, "Information on the Comprehensive Health Checkup"

The residents who were forced to evacuate from covered areas have been living as refugees away from their own homes for a prolonged period of time. Fukushima Prefecture has been conducting the Comprehensive Health Checkup for the purpose of monitoring whether they have any physical problems and utilizing the data for early treatment as necessary.

Included in this reference material on March 31, 2013
Updated on December 1, 2017

Comprehensive Health Checkup

Comprehensive Health Checkup: Outline (1/2)

[Check items]

Age bracket	Check items
Aged zero to 6 (babies and preschoolers)	Body height and weight [Only when requested] Blood counts (red blood cell count, hematocrit, hemoglobin, platelet count, white blood cell count, and differential white blood cell count)
Aged 7 to 15 (first to ninth grade students)	Body height, weight, blood pressure, and blood counts (red blood cell count, hematocrit, hemoglobin, platelet count, white blood cell count, and differential white blood cell count) [Only when requested] Blood biochemistry (AST, ALT, γ-GT, TG, HDL-C, LDL-C, HbA1c, blood sugar, serum creatinine, and uric acid)
Aged 16 or older	Body height, weight, abdominal girth, body mass index (BMI), blood pressure, and blood counts (red blood cell count, hematocrit, hemoglobin, platelet count, white blood cell count, and differential white blood cell count) Urine test (uric protein, uric sugar, and uric blood) Blood biochemistry (AST, ALT, γ-GT, TG, HDL-C, LDL-C, HbA1c, blood sugar, serum creatinine, eGFR, and uric acid) * Items in red letters are additional items that are not ordinarily checked in the specified health checkups.

[Coverage]

Residents who were registered at any of the municipalities designated as Restricted Areas, Deliberate Evacuation Areas or Evacuation-Prepared Areas in Case of Emergency or at any of the areas containing Specific Spots Recommended for Evacuation as of 2011 (approx. 210,000 people) and residents who were found to require the Comprehensive Health Checkup as a result of the Basic Survey

(= The entire areas of Tamura City, Minamisoma City, Kawamata Town, Hirono Town, Naraha Town, Tomioka Town, Kawauchi Village, Okuma Town, Futaba Town, Namie Town, Katsurao Village and Iitate Village, and parts of Date City)

Prepared based on the website of the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University, "Information on the Comprehensive Health Checkup"

Check items are those for ordinary health checkups plus blood counts, serum creatinine, urine occult blood, etc.

In the Specific Health Checkup targeting people aged 16 or older conducted by municipalities excluding Date City, items for ordinary health checkups plus those in red letters are checked.

The Comprehensive Health Checkup covers people who were residing in any of the municipalities designated as Restricted Areas, Deliberate Evacuation Areas or Evacuation-Prepared Areas in Case of Emergency or in any of the areas containing Specific Spots Recommended for Evacuation* at the time of the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS.

* The entire areas of Tamura City, Minamisoma City, Kawamata Town, Hirono Town, Naraha Town, Tomioka Town, Kawauchi Village, Okuma Town, Futaba Town, Namie Town, Katsurao Village and Iitate Village, and parts of Date City

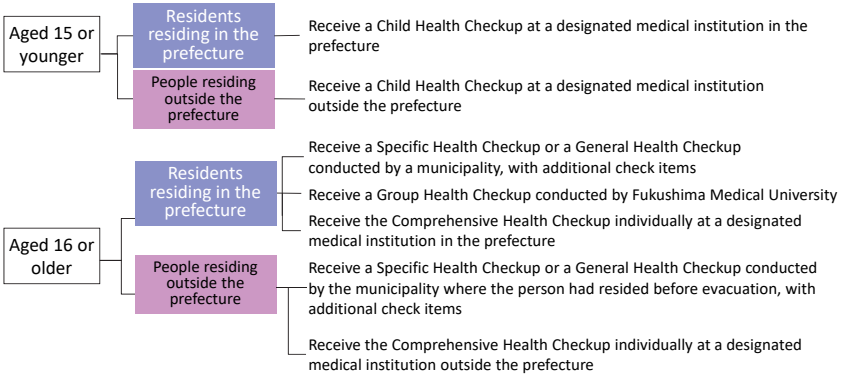
Included in this reference material on March 31, 2013
Updated on March 31, 2017

Comprehensive Health Checkup

Comprehensive Health Checkup: Outline (2/2)

Every year, the Comprehensive Health Checkup is conducted at designated medical institutions individually for all children aged 15 or younger and people aged 16 or older who reside outside the prefecture. Residents aged 16 or older who reside within the prefecture can receive the Comprehensive Health Checkup by any of the following three methods:

1. Receive a Specific Health Checkup or a General Health Checkup conducted by a municipality, wherein the items specific to the Comprehensive Health Checkup are additionally checked
2. Receive a Group Health Checkup conducted by Fukushima Medical University
3. Individually receive the Comprehensive Health Checkup at any of the designated medical institutions in the prefecture



Prepared based on the website of the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University, "Information on the Comprehensive Health Checkup"

Children aged 15 or younger, whether residing in or outside Fukushima Prefecture, can receive the Comprehensive Health Checkup at any of the designated medical institutions with cooperating pediatricians. Examinees should return to the same medical institution respectively to receive explanations on the results directly from doctors. They can consult with doctors and receive answers or treatment on these occasions if they have any worries or if the health checkup results contain some worrisome points.

Residents aged 16 or older who reside in the prefecture can select one of three methods to receive a checkup: Receive a Specific Health Checkup or a General Health Checkup conducted by a municipality, with additional check items specific to the Comprehensive Health Checkup; Receive a Group Health Checkup conducted by Fukushima Medical University; or Receive the Comprehensive Health Checkup individually at a designated medical institution in the prefecture.

Included in this reference material on March 31, 2013
Updated on March 31, 2016

Comprehensive Health Checkup

Comprehensive Health Checkup: What Has Become Clear

Latest Survey Results: http://www.pref.fukushima.lg.jp/site/portal/kenkocyosa-kentoiinkai.html (in Japanese)

■ Changes over year of the results for major check items
(Age bracket: FY2010 - Aged 40 or older; FY2011 to FY2015 - Aged 40 to 64)

	Overweight BMI: 25 (kg/m2) or over		Poor glycemic control HbA1c (NGSP): 7.0% or over	
Time of the health checkup	Male	Female	Male	Female
FY2010 *1	29.8%	28.1%	2.4% *2	1.6% *2
FY2011	41.6%	28.4%	5.7%	2.6%
FY2012	40.3%	29.2%	5.1%	2.4%
FY2013	40.9%	28.9%	5.4%	2.7%
FY2014	39.3%	27.9%	5.1%	2.3%
FY2015	40.6%	28.4%	4.9%	2.4%

	Liver function abnormality ALT: 51 (U/L) or over		High blood pressure Systolic blood pressure: 140 mmHg or over	
Time of the health checkup	Male	Female	Male	Female
FY2010 *1	3.8%	1.7%	33.2%	28.7%
FY2011	11.3%	3.9%	27.5%	19.1%
FY2012	11.6%	4.2%	21.5%	14.9%
FY2013	11.2%	3.9%	19.0%	12.9%
FY2014	10.2%	3.5%	17.4%	11.5%
FY2015	10.8%	3.4%	17.4%	12.3%

*1: The results for FY2010 are those of the Specific Health Checkup and the Older Senior Citizen Health Checkup conducted in FY2010 by municipalities that were later designated as Evacuation Areas, etc. after the earthquake. They are only for reference in the comparison as they differ from the Comprehensive Health Checkup conducted from FY2011 to FY2015 in terms of the cohort and examinees' age brackets.

*2: HbA1c (JDS)

Prepared based on Handout 3 of the 12th, Handout 3 of the 21st and Handout 3 of the 26th Prefectural Oversight Committee Meetings for Fukushima Health Management Survey

The Comprehensive Health Checkup conducted from FY2011 to FY2015 covered residents of Evacuation Areas designated as of FY2011 and residents who were found to require the Comprehensive Health Checkup as a result of the Basic Survey. The table above shows only the results for the examinees aged 40 to 64. On the other hand, the results for FY2010 are those of the checkup conducted in FY2010, targeting people covered by the national health insurance program aged 40 or older and senior citizens, by municipalities that were later designated as Evacuation Areas, etc. after the earthquake. As these checkups differ from the Comprehensive Health Checkup conducted from FY2011 to FY2015 in terms of the cohort and examinees' age brackets, the results for FY2010 as shown in the table are just for reference.

The condition of being overweight (BMI: 25 kg/m2 or over) was found more among males than among females. The percentage of examinees who were overweight remained almost unchanged from FY2011 to FY2013 and showed a declining trend from FY2013 to FY2014, but increased again in FY2015 for both males and females.

The percentage of examinees with poor glycemic control (HbA1c: 7.0% or over) decreased in FY2015 from FY2011.

The percentage of examinees with liver function abnormality (ALT: 51 (U/L) or over), which is generally higher among males than among females, has shown no significant changes since FY2011.

The percentage of examinees with high blood pressure (systolic blood pressure: 140 mmHg or over) was higher among males than among females for all age brackets, but the percentage generally has shown a declining trend in FY2012 to FY2015 compared to the level in FY2011.

Included in this reference material on March 31, 2016
Updated on December 1, 2017

Comprehensive Health Checkup

Health Checkup Targeting Residents Uncovered by Existing Health Checkups

[Outline]

In order to promote the prevention and early detection and treatment of lifestyle-related diseases throughout a lifetime, Fukushima Prefecture now offers a health checkup for residents who have not been covered by the existing systems and have not received health examinations or checkups.

[Coverage]

Residents aged approximately 19 to 39 who are residing anywhere outside the Evacuation Areas, etc. and have no opportunity to receive health examinations or checkups under the existing systems (i.e., those covered by the national health insurance program and dependents of those covered by the social insurance program, etc., excluding students)

[Check items]

Body height, weight, BMI, blood pressure, urine test (uric protein and uric sugar), blood biochemistry (AST, ALT, γ-GT, TG, HDL-C, LDL-C, HbA1c, and fasting (or non-fasting) blood sugar)

Prepared based on the material for the 22nd Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

This is the system newly established as part of the Fukushima Health Management Survey for the purpose of offering a health checkup to residents who have not been covered by the existing systems and have not received health examinations or checkups, thereby promoting and maintaining good health and the possibility of healthy longevity for residents of Fukushima Prefecture.

*1 Health examinations and checkups under the existing systems:

・Health examinations based on the Industrial Safety and Health Act (periodic health examinations, etc.)

・Health checkups for students based on Article 13 of the School Health and Safety Act

・The Comprehensive Health Checkup conducted by Fukushima Prefecture, targeting residents of the Evacuation Areas, etc.(*2), under the framework of the Fukushima Health Management Survey (the Comprehensive Health Checkup with additional check items)

* 2 Evacuation Areas, etc.:

The entire areas of Tamura City, Minamisoma City, Kawamata Town, Hirono Town, Naraha Town, Tomioka Town, Kawauchi Village, Okuma Town, Futaba Town, Namie Town, Katsurao Village and Iitate Village, and parts of Date City (the areas containing Specific Spots Recommended for Evacuation)

Included in this reference material on March 31, 2016
Updated on March 31, 2017

Mental Health

Mental Health and Lifestyle Survey: Purpose

"We will promote the mental and physical health of residents of the Evacuation Areas, etc."

Fukushima Prefecture has been conducting the Mental Health and Lifestyle Survey with the aim of accurately ascertaining the mental and physical problems of residents who have been facing difficulties due to the Great East Japan Earthquake and the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS in order to provide them with proper health, medical and welfare services, and also handing down to future generations accumulated knowledge on better mental care in an emergency or in the event of a natural disaster.

Prepared based on the website of the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University, "Information on the Mental Health and Lifestyle Survey"

Many of the residents whose houses are located in municipalities designated as Evacuation Areas were forced to evacuate and live as refugees for a prolonged period of time. They have experienced drastic changes in their living environment and must have been forced to change their individual lifestyles as well. In order to carefully watch not only the physical disorders but also mental problems of these residents and offer them appropriate support and build a better system, Fukushima Prefecture has been conducting the Mental Health and Lifestyle Survey.

Included in this reference material on March 31, 2013
Updated on March 31, 2016

Mental Health — Mental Health and Lifestyle Survey: Outline (1/2)

[Coverage]

Residents who were registered at any of the municipalities designated as Restricted Areas, Deliberate Evacuation Areas or Evacuation-Prepared Areas in Case of Emergency or at any of the areas containing Specific Spots Recommended for Evacuation as of 2011 (approx. 210,000 people) and residents who were found to require the Comprehensive Health Checkup as a result of the Basic Survey

(= The entire areas of Tamura City, Minamisoma City, Kawamata Town, Hirono Town, Naraha Town, Tomioka Town, Kawauchi Village, Okuma Town, Futaba Town, Namie Town, Katsurao Village and Iitate Village, and parts of Date City)

[Method]

Prepare inquiry sheets by age bracket (self-reporting questionnaires or those to be filled in by guardians) and send them to the survey targets (responses are received by post or online)

[Major survey items]

- Present physical and mental status
- Lifestyle (diet, sleep, and smoking, drinking and exercise habits)
- Present living conditions (the public)

[Measures after receiving responses]

For respondents who are deemed to require support based on their responses, clinical psychotherapists, public health nurses, or clinical nurses, etc. of the Mental Health Support Team make a phone call to give advice and support concerning problems with their mental health and lifestyles.

Prepared based on the website of the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University, "Information on the Mental Health and Lifestyle Survey"

As in the case of the Comprehensive Health Checkup, the Mental Health and Lifestyle Survey also covers residents who were registered, as of March 11, 2011, and as of April 1 of the relevant survey year, at any of the municipalities that were designated as Restricted Areas, Deliberate Evacuation Areas or Evacuation-Prepared Areas in Case of Emergency or at any of the areas containing Specific Spots Recommended for Evacuation* at the time of the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS.

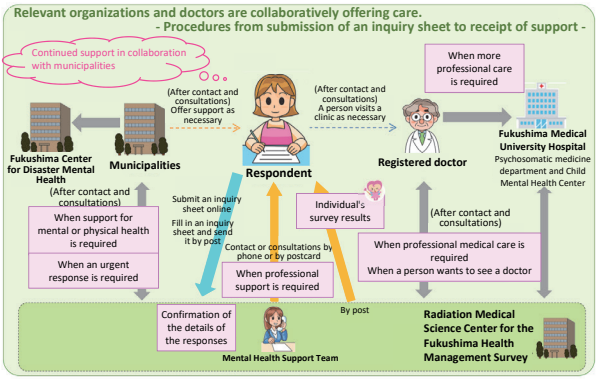
These residents are to respond to questions in an inquiry sheet concerning their mental and physical health conditions. Their responses are compiled into indicators to check their need for support.

Different inquiry sheets are prepared depending on the age brackets, with the aim of taking required measures more appropriately. Children are divided into four age brackets: those aged zero to 3; those aged 4 to 6; elementary school students; and junior high school students. People aged 16 or older are categorized as the general public.

In addition to questions concerning present mental and physical health conditions, the survey items include questions about changes in lifestyles, such as diet, sleep, drinking, smoking, and exercise habits, as respondents must have experienced drastic changes in their living environment.

Included in this reference material on March 31, 2013
Updated on December 1, 2017

Mental Health and Lifestyle Survey: Outline (2/2)



* For people who are deemed to require continued support, care is provided on an ongoing basis through collaboration among regional registered doctors, municipalities and the Fukushima Center for Disaster Mental Health.

* Survey results are sent individually from FY2014.

[Registered doctors]
Psychiatrists and pediatricians, etc., who have received lectures concerning disaster mental health and radiation medical science: As of the end of December 2017, there are 130 registered doctors in 81 medical institutions.

	Number of people who received support by phone		Number of people who received support in writing	
	Children	People aged 16 or older	Children	People aged 16 or older
FY2011	1,180	6,310	1,066	10,898
FY2012	623	5,991	800	10,168
FY2013	473	3,913	752	7,664
FY2014	327	3,053	517	6,244
FY2015	250	2,567	435	6,075

Prepared based on the materials for the 11th, 15th, 19th, 22nd, 26th and 27th Prefectural Oversight Committee Meetings for Fukushima Health Management Survey

Analysis results are individually sent to people who have submitted inquiry sheets.

For respondents who are considered to require professional support as a result of analyzing their responses, clinical psychotherapists, public health nurses, or clinical nurses, etc. make a phone call to give advice and support concerning problems with their mental health and lifestyles. For people who did not enter their telephone numbers in inquiry sheets, contact is made in writing.

Remarks by people who have received support by phone include, "I am glad that I can confess what I cannot say to my family," or, "I am relieved to know that I can call this number to make consultations whenever I feel depressed."

Regarding those in need of continued support or professional medical care, relevant information is shared among municipalities, the Fukushima Center for Disaster Mental Health and registered doctors, on a case-by-case basis, to create a more positive support network.

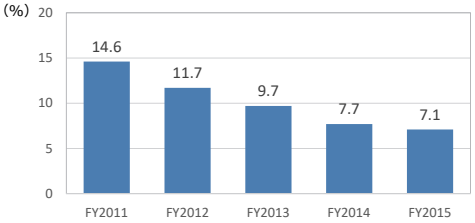
Included in this reference material on March 31, 2013
Updated on December 28, 2017

Mental Health

Mental Health and Lifestyle Survey: What Has Become Clear (1/4)

Latest Survey Results: http://www.pref.fukushima.lg.jp/site/portal/kenkocyosa-kentoiinkai.html (in Japanese)

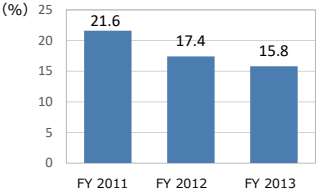
● Percentage of people who are considered to require support for their depressions and anxieties



Measurement scale: **K6***

*Respondents reply to each question of a six-item questionnaire concerning their depression and anxieties with a score from zero to four points. When the total is 13 points or over, a mood disorder or anxiety disorder is suspected.

● Percentage of people who are considered to require support for their traumatic stresses due to the disaster



Measurement scale: **PCL***

*Respondents reply to each question of a 17-item questionnaire concerning their frequently arising problems and need arising from their disaster experience (traumatic stress) with a score from zero to five. When the total is 44 points or over, PTSD is suspected.

*In order to ease psychological burdens associated with replying to the questionnaire, the FY2014 and FY2015 surveys did not include PCL-related questions.

Prepared based on the materials for the 11th, 15th, 19th and 23rd and 27th Prefectural Oversight Committee Meetings for Fukushima Health Management Survey

・K6*1 remains at a high level, although the values have been declining compared with the FY2011 survey and the FY2012 survey.
・Females show higher values than males. The gap by age bracket was the smallest in FY2015 compared with the results of the past surveys.
・PCL*2 remains at a high level, although the values have been declining compared with the FY2011 survey and the FY2012 survey.

*1: K6 = Scale to measure the levels of depression and anxieties
Respondents reply to each question of a six-item questionnaire concerning the frequencies with which they felt depressed or anxious during the past 30 days (such as "Have you felt extremely nervous?" or "Have you felt desperate and helpless?"). This survey targets people aged 16 or older to ascertain whether any mood or anxiety disorder poses a problem in their daily lives, based on their responses.

*2: PCL (Post-Traumatic Stress Disorder Checklist) = Scale to measure traumatic stresses
Respondents reply to each question of a 17-item questionnaire concerning how often they had problems and needs arising from their disaster experience (traumatic stress) during the past 30 days (such as "Repeatedly remembered disturbing memories, ideas, images (scenes) of the relevant stress experience" or "Repeatedly had disturbing dreams of the relevant stress experience"). Through this survey, individuals' levels of traumatic stress are ascertained.

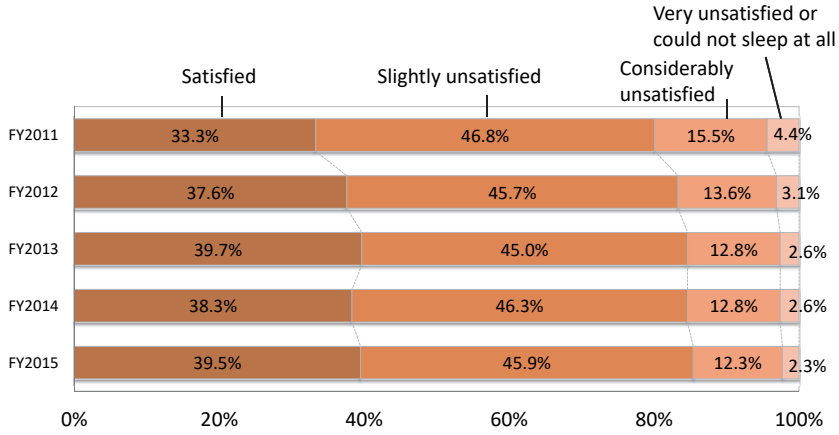
Included in this reference material on March 31, 2015
Updated on December 1, 2017

Mental Health

Mental Health and Lifestyle Survey: What Has Become Clear (2/4)

Latest Survey Results: http://www.pref.fukushima.lg.jp/site/portal/kenkocyosa-kentoiinkai.html (in Japanese)

[Levels of satisfaction regarding sleep during the latest one month period] Those aged 16 or older



Prepared based on the materials for the 11th, 15th, 19th,23rd and 27th Prefectural Oversight Committee Meetings for Fukushima Health Management Survey

Sleep is a significant factor that exerts influence on various chronic diseases such as high blood pressure or diabetes, as well as affecting people's mental health.

It should be noted that approximately 60% of the respondents are somewhat unsatisfied with their sleep to some degree.

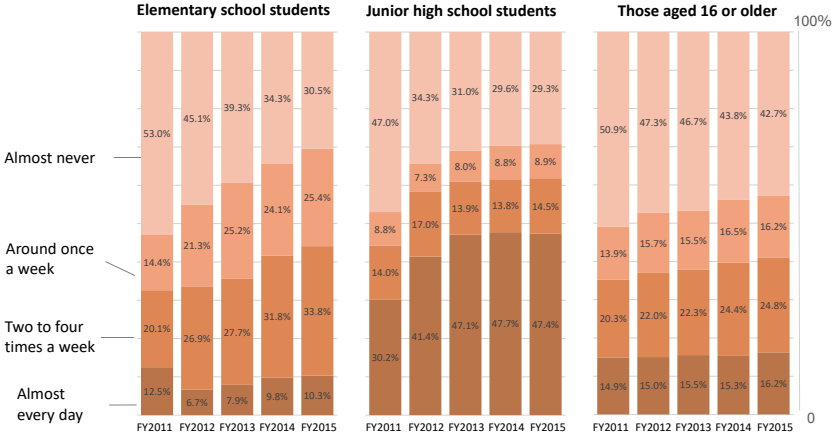
Included in this reference material on March 31, 2016
Updated on December 1, 2017

Mental Health

Mental Health and Lifestyle Survey: What Has Become Clear (3/4)

Latest Survey Results: http://www.pref.fukushima.lg.jp/site/portal/kenkocyosa-kentoiinkai.html (in Japanese)

[Percentages concerning daily exercises]



Prepared based on the materials for the 11th, 15th, 19th, 23rd and 27th Prefectural Oversight Committee Meetings for Fukushima Health Management Survey

Not only those aged 16 or older, but also elementary school students and junior high school students have come to have more chances for exercises, showing an improving trend.

In particular, exercises are considered to exert a significant influence on the growth of elementary school students and junior high school students.

Included in this reference material on March 31, 2016
Updated on December 1, 2017

Mental Health

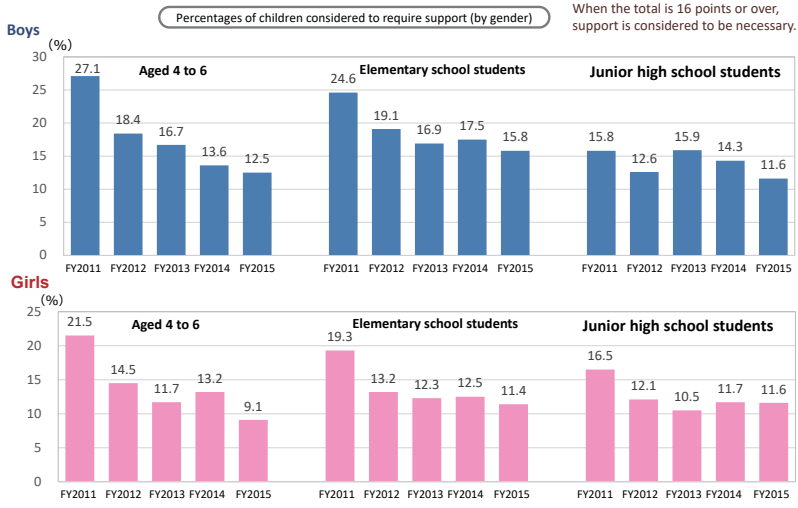
Mental Health and Lifestyle Survey: What Has Become Clear (4/4)

Latest Survey Results: http://www.pref.fukushima.lg.jp/site/portal/kenkocyosa-kentoiinkai.html (in Japanese)

[Children's mental health conditions]

Percentages of children considered to require support (by gender)

Measurement scale: SDQ*
When the total is 16 points or over, support is considered to be necessary.



Prepared based on the materials for the 11th, 15th, 19th, 23rd and 27th Prefectural Oversight Committee Meetings for Fukushima Health Management Survey

• As an indicator to evaluate children's mental health conditions, SDQ* is utilized.
• In a prior study targeting the public in Japan who did not experience the nuclear disaster, people showing SDQ points over 16 accounted for 9.5% of the total. Compared with this, percentages of children showing SDQ points over 16 were higher for all groups except for girls aged 4 to 6 in the FY2015 survey, as was the case in the surveys in previous fiscal years.
• In the FY2015 survey, percentages of high SDQ points decreased for all groups compared with the results of the FY2011 survey. However, the improvement slowed down and the percentages remained almost unchanged from those of the FY2012 survey.
• Hours of sleep in the FY2015 survey were almost the same as those in the FY2012 survey and were approaching the level shown in the preceding study. Furthermore, the FY2015 survey shows a declining trend in percentages of children who seldom do exercise, but suggests poorer exercise habits compared with the results of a nationwide survey, although a direct comparison is difficult due to differences in survey content.

* SDQ (Strengths and Difficulties Questionnaire) = Scale to measure children's mental health conditions
Respondents reply to each question of a 25-item questionnaire concerning children's moods and behavior during the past six months (such as "Gives due consideration to other's feelings" or "Is restless and cannot stay still for a long time"). This survey covers those aged 4 to 15 to judge whether they need professional support or not.

Included in this reference material on March 31, 2015
Updated on December 1, 2017

Pregnancy and Birth Survey

Pregnancy and Birth Survey: Purpose

"We will promote the health of pregnant women in Fukushima Prefecture."

Many pregnant women intending to give birth and raise children in Fukushima Prefecture have been forced to live as refugees due to the Great East Japan Earthquake and the accident at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS, and have stresses from changes in their lifestyles and worries concerning radiation.

Therefore, Fukushima Prefecture has been conducting the Pregnancy and Birth Survey with the aim of properly ascertaining those pregnant women's current status, mental and physical health conditions, as well as opinions and wishes in order to alleviate their worries, provide necessary care and ensure peace of mind and, to utilize the obtained data for improving obstetric and perinatal care in Fukushima Prefecture.

Prepared based on the material for the 22nd Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

Worries, anxieties and stresses caused by the accident at TEPCO's Fukushima Daiichi NPS have been obstacles for women who intend to give birth and raise children in Fukushima Prefecture.

In light of such circumstances, Fukushima Prefecture has been conducting the Pregnancy and Birth Survey in order to ascertain pregnant women's mental and physical health conditions with the aim of providing care to those considered to be in need of support such as an opportunity to have consultations with midwives or public health nurses. At the same time, the survey also aims to obtain data to be utilized for improving obstetric and perinatal care in Fukushima Prefecture.

Included in this reference material on March 31, 2013
Updated on March 31, 2016

Pregnancy and Birth Survey

Pregnancy and Birth Survey: Outline (1/2)

[Coverage]

Pregnant women who obtained a maternity handbook within Fukushima Prefecture and those who obtained a maternity handbook somewhere else but gave birth in the prefecture during the survey period for every fiscal year

Fiscal year	Coverage	Responses from	
FY2011	16,001 people	9,316 people	(58.2%)
FY2012	14,516 people	7,181 people	(49.5%)
FY2013	15,218 people	7,260 people	(47.7%)
FY2014	15,125 people	7,132 people	(47.2%)
FY2015	14,569 people	6,866 people	(47.1%)
FY2016*	14,138 people	6,069 people	(42.9%)

Conducted a follow-up survey in approx. 4 years after delivery

Coverage	Responses from	
7,252 people	2,554 people	(35.2%)
5,602 people	2,021 people	(36.1%)

* Provisional values (as of April 30, 2017)

[Survey method]

Inquiry sheets are sent to the targeted pregnant women, asking them to fill in the sheets and send them back.

(From the FY2016 survey, responses are accepted by post or online.)

Major survey items are as follows:

- Pregnant women's mental health conditions
- Present living conditions (circumstances of a refugee life or forced separation from family members)
- Situations during delivery and pregnant women's physical health conditions
- Confidence in raising children
- Attitude toward the next pregnancy

Prepared based on the website of the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University and the materials for the 27th and 28th Prefectural Oversight Committee Meetings for Fukushima Health Management Survey

The Pregnancy and Birth Survey covers pregnant women who newly obtained a maternity handbook every fiscal year.

Not only those who obtained a maternity handbook in Fukushima Prefecture but also those who obtained a maternity handbook somewhere else but gave birth in the prefecture are covered.

For the former, inquiry sheets are sent based on information provided by each municipality in the prefecture. The latter may use inquiry sheets available at obstetric institutions in the prefecture or ask the Radiation Medical Science Center for the Fukushima Health Management Survey to send them inquiry sheets.

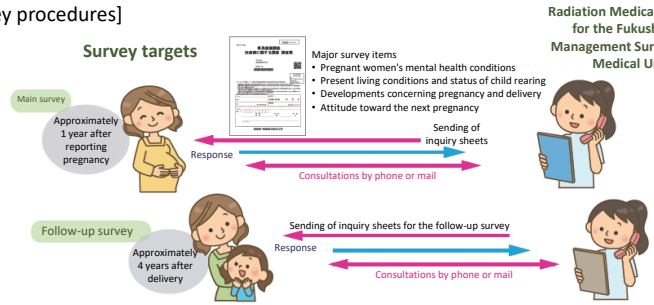
Survey targets are asked to fill in inquiry sheets and send them back. From the FY2016 survey, responses can also be submitted online.

Included in this reference material on March 31, 2013
Updated on December 1, 2017

Pregnancy and Birth Survey

Pregnancy and Birth Survey: Outline (2/2)

[Survey procedures]



- Coverage of the FY2017 main survey
  (i) Pregnant women who obtained a maternity handbook in any municipality in Fukushima Prefecture from August 1, 2016, to July 31, 2017
  (ii) Pregnant women who obtained a maternity handbook outside Fukushima Prefecture during the period mentioned above but gave birth in Fukushima Prefecture
- Coverage of the FY2017 follow-up survey
  Respondents of the FY2013 survey who gave birth from August 1, 2012, to April 8, 2014

→ Since the FY2016 survey, responses can also be submitted online.
On the website of the Radiation Medical Science Center for the Fukushima Health Management Survey, responses can be made using personal computers or smartphones.

Prepared based on the leaflet on the Pregnancy and Birth Survey, and the website of the Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University

Details of the responses are compiled by the Radiation Medical Science Center for the Fukushima Health Management Survey to detect people considered to be in need of support. * If there are any people who are considered to be in need of support, midwives, public health nurses, doctors or other specialized staff members offer consultations or other support to such people by mail or by other means.

* Respondents who replied that they tend to feel depressed and that they are not interested in things, or respondents who are considered to be in need of support based on the content of their free remarks (such as those who are in need of help, who are severely depressed, who need support for child rearing, who are worried about radiation doses, or who directly made requests or are requiring concrete answers)

Included in this reference material on March 31, 2013
Updated on December 1, 2017

Pregnancy and Birth Survey

Pregnancy and Birth Survey: Achievement and Content of Support

[Changes in coverage]

Out of all respondents, for those who were judged to be in need of support from the content of their responses, support has been offered by full-time midwives, etc. by phone or mail.

Fiscal year	Number of people who received support by phone	Percentage of those who received support among all respondents
FY2011	1,401 people	15.0%
FY2012	1,104 people	15.4%
FY2013	1,101 people	15.2%
FY2014	830 people	11.6%
FY2015	913 people	13.0%
FY2016*	782 people	12.9%

	Number of people who received support by phone	Percentage of those who received support among all respondents
Survey following up the FY2011 survey	375 people	14.7 %
Survey following up the FY2011 survey	255 people	12.7 %

* Provisional values (as of April 30, 2017)

[Topics of the consultations by phone]

	FY2011	FY2012	FY2013	FY2014 to FY2015 (the same ranking for both years)	Survey following up the FY2011 survey
1st	Worries over radiation and its effects	Mothers' mental and physical health	Mothers' mental and physical health	Mothers' mental and physical health	Mothers' mental and physical health
2nd	Mothers' mental and physical health	Matters concerning child rearing	Matters concerning child rearing	Matters concerning child rearing	Worries over radiation and its effects
3rd	Matters concerning child rearing	Worries over radiation and its effects	Children's mental and physical health	Matters concerning family life	Matters concerning child rearing

Matters concerning child rearing include concerns about baby food, night crying, constipation, vaccination, etc.

Prepared based on the material for the 27th Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

Immediately after the earthquake, the most frequent topic was worries over radiation and its effects, but the percentage of such consultations is declining over time. Since FY2012, consultations on mothers' mental and physical health and matters concerning child rearing have increased and now rank high.

Regarding the survey following up the FY2012 survey, those who required support accounted for 12.7% of all respondents, showing a decrease from the percentage at the time of the survey following up on the FY2011 survey (14.7%). The most frequent topic was mothers' mental and physical health (44.9%). Consultations concerning worries over radiation and its effects accounted for 13.3%, considerably lower than at the time of the survey following up on the FY2011 survey (25.6%).

Included in this reference material on March 31, 2013
Updated on December 1, 2017

Pregnancy and Birth Survey

Pregnancy and Birth Survey: What Has Become Clear (1/2)

Latest Survey Results: http://www.pref.fukushima.lg.jp/site/portal/kenkocyosa-kentoiinkai.html (in Japanese)

[Percentages of premature births, low birth-weight babies, and congenital abnormalities or anomalies]

Percentages of premature births, low birth-weight babies, and congenital abnormalities or anomalies obtained through the Pregnancy and Birth Survey were almost the same as the general level and those obtained through nationwide surveys.

(%)

	Percentage of premature births		Percentage of low birth-weight babies		Percentage of congenital abnormalities or anomalies	
	Main survey	Nationwide survey	Main survey	Nationwide survey	Main survey	General level
FY2011	4.8	5.7	8.9	9.6	2.85	3 to 5 (based on the 2014 Obstetric Care Guidelines)
FY2012	5.7	5.7	9.6	9.6	2.39	
FY2013	5.4	5.8	9.9	9.6	2.35	
FY2014	5.4	5.7	10.1	9.5	2.30	
FY2015	5.8	5.6	9.8	9.5	2.24	

Nationwide surveys: Percentages based on the Vital Statistics

Premature births: Babies born at a gestational age from 22 weeks to less than 37 weeks
Low birth-weight babies: Babies born smaller than 2500g

Prepared based on the material for the 26th Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

The number of babies born in Fukushima Prefecture decreased temporarily after the earthquake, but the number increased in FY2013 and FY2014 compared with FY2012. Radiation effects on newborn babies had been worried about, but percentages of premature births, low birth-weight babies, and congenital abnormalities or anomalies in Fukushima Prefecture after the earthquake were found to be almost the same as generally available data, including Vital Statistics collected nationally.

A report of a FY2013 Ministry of Health, Labour and Welfare (MHLW) Grant Research, "Research on the Incidence of Congenital Anomalies in Japan and Effect Factors (Including Effects of Radiation Exposure and Prenatal Diagnoses) through Monitoring Analysis," states that the incidence of congenital anomalies detected among 17,773 babies born at 36 maternity hospitals in Fukushima Prefecture after the earthquake shows similar outcomes to nationwide surveys, with no notably higher outlying events when compared with other prefectures.

Included in this reference material on March 31, 2015
Updated on December 1, 2017

Pregnancy and Birth Survey

Pregnancy and Birth Survey: What Has Become Clear (2/2)

Latest Survey Results: http://www.pref.fukushima.lg.jp/site/portal/kenkocyosa-kentoiinkai.html (in Japanese)

[Changes in pregnant women's depressive tendencies]

The percentage of respondents who replied that they tend to feel depressed and/or that they are not interested in things → Pregnant women's depressive tendencies have been weakening gradually but are still strong.

	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016
Main survey	27.1%	25.5%	24.5%	23.4%	22.0%	
Follow-up survey (conducted in FY2015 targeting FY2011 survey respondents)					25.6%	
Follow-up survey (conducted in FY2016 targeting FY2012 survey respondents)						

[Changes in percentage of respondents who answered "Yes" to the question "Are you considering another pregnancy?"]

Nationwide survey	Pregnancy and Birth Survey				
FY2010	FY2012	FY2013	FY2014	FY2015	FY2016*
51.0%	52.9%	52.8%	57.1%	53.3%	55.4%

Percentage of respondents who are married for less than 10 years and plan to have a child in the nationwide survey, "Fourteenth Japanese National Fertility Survey in 2010" (when having any children already)

* The 2011 survey did not contain the relevant question.

* Provisional values (as of March 31, 2017)

Prepared based on the material for the 27th Prefectural Oversight Committee Meeting for Fukushima Health Management Survey

For questions concerning pregnant women's depressive tendencies, respondents who replied that they tend to feel depressed and/or that they are not interested in things have been decreasing but such tendencies are still strong.

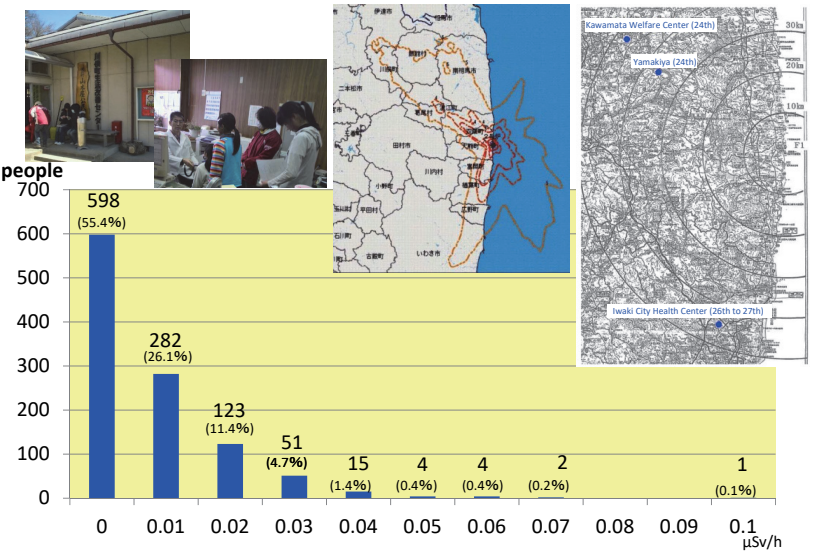
According to the "Healthy Parents and Children 21" (a national campaign to promote improvement of health standards of mothers and children), the percentage of postnatal depression evaluated using the Edinburgh Postnatal Depression Scale was 9.0% in 2013. On the other hand, that percentage using the same scale and calculated from the results of the FY2016 Pregnancy and Birth Survey (provisional values) was 11.2%, higher than the national average.

The FY2016 Pregnancy and Birth Survey (provisional values) also revealed that respondents considering another pregnancy accounted for 53.3%. Since the FY2012 survey, more than half of the respondents wish to have more children. For reference, according to the Fourteenth Japanese National Fertility Survey in 2010, respondents who are married for less than ten years and plan to have a child accounted for 58% (or 51% among those who already have any children).

Included in this reference material on March 31, 2015
Updated on December 1, 2017

External Counting Survey

Childhood Thyroid Examination



Nuclear Safety Commission, "Evaluation of the Results of the Childhood Thyroid Examination," September 9, 2011

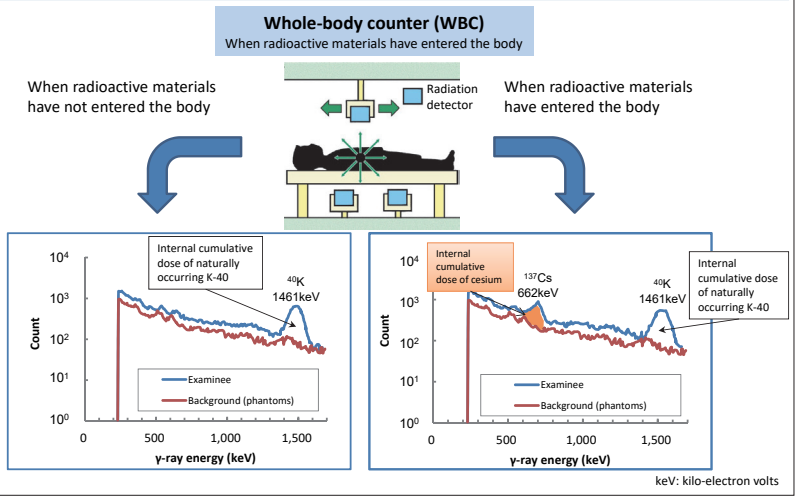
Based on estimates by SPEEDI on March 23, 2011, the Local Nuclear Emergency Response Headquarters conducted the Childhood Thyroid Examination to ascertain health effects of radiation on children in response to a request from the Technical Advisory Organization in an Emergency of the Nuclear Safety Commission of Japan (dated March 23 and 25). The figure shows the results for 1,080 children for whom measurement was conducted properly, out of 1,149 survey targets. The figure excludes the results for 66 children for whom simplified measurement was not appropriate due to environmental doses at their measuring spots (proper evaluation based on simplified measurement was difficult due to high ambient dose rates) and for three children whose ages were unknown. However, for all children who received the examination, measured values were below 0.2 μSv/h, which is set as the standard screening level by the Nuclear Safety Commission of Japan.

Included in this reference material on March 31, 2013
Updated on March 31, 2017

External Counting Survey

Internal Exposure Measurement Using a Whole-body Counter

Whole-body counter (WBC): A device to measure radiation from radioactive materials within the body It can measure radionuclides emitting γ-rays, such as Cs-134 and Cs-137.



A whole-body counter is a device to measure γ-rays emitted from the body. As γ-ray energy differs by radionuclide, if a specific amount of energy, for example, 1,461 keV, which is the γ-ray energy of radioactive potassium (K-40), is counted, this can be interpreted as γ-rays emitted from K-40 in the body. The γ-ray energy of Cs-137 is 662 keV.

Potassium is an essential element for a living organism and approximately 0.01% of it is radioactive. Radioactive potassium is mainly dissolved in cellular water and exists in muscles but not so much in fat cells that contain little water.

As radioactive cesium spreads all over the body, the internal dose of cesium is measured using a whole-body counter.

Included in this reference material on March 31, 2013
Updated on March 31, 2016

External Counting Survey

Results of the Internal Exposure Measurement Using a Whole-body Counter

Targeting the residents of the Evacuation Areas and the areas where internal and external exposure doses are likely to be higher than in other areas based on the results of the environmental monitoring survey, etc. (Yamakiya District in Kawamata Town, Iitate Village and Namie Town), the internal exposure measurement using a whole-body counter commenced on June 27, 2011. The targeted areas were expanded sequentially, and measurements were conducted for a total of 328,354 people by November 30, 2017. For over 99.9% of them, committed effective doses due to Cs-134 and Cs-137 were below 1 mSv and even the maximum measured value was below 3 mSv. Measured values were all unlikely to cause any health effects.

(i) Targeted local governments: All 59 municipalities in Fukushima Prefecture

(ii) Organizations that conducted the measurement

Fukushima Prefecture; Hirosaki University Hospital; Minamisoma City General Hospital; Japan Atomic Energy Agency; Niigata Prefecture Radiation Examination Office; Hiroshima University Hospital; Nagasaki University Hospital; Japanese Red Cross Otsu Hospital; Mori no Miyako Industrial Health Association; National Hospital Organization Kanazawa Medical Center; Ehime University Hospital; and the National Institute of Radiological Sciences

(iii) 'Mobile measurement' using whole-body counter vehicles outside Fukushima Prefecture

Fukushima Prefecture runs whole-body counter vehicles for mobile measurement so that evacuees outside the prefecture can also receive measurement. By March 2016, mobile measurement was conducted in 38 prefectures including the Tokyo Metropolis (other than Aomori, Ibaraki, Niigata, Ishikawa, Shiga, Hiroshima, Aichi and Nagasaki Prefectures), where there is no permanent organization to which Fukushima Prefecture commissions the measurement.

(iv) Measurement results (committed effective doses) (Results up to November 2017 were released on December 26, 2017.

	Jun. 27, 2011 – Jan. 31, 2012	Feb. 1, 2012 – Nov. 30, 2017	Total
Less than 1 mSv	15,384 people	312,944 people	328,328 people
1 mSv	13 people	1 person	14 people
2 mSv	10 people	zero	10 people
3 mSv	2 people	zero	2 people
Total	15,409 people	312,945 people	328,354 people

* Committed effective dose: Assuming that until the end of January 2012, a person ingested radiation once on March 12, 2011, and, from February 2012 onward, a person orally ingested the equal amount of radiation every day from March 12, 2011, to the day preceding the measurement date, the person's lifetime internal doses are calculated by summing up the doses for fifty years in the case of an adult and for the years elapsed until becoming 70 years old in the case of a child.

Prepared based on the website of Fukushima Prefecture, "Results of the Internal Exposure Measurement Using a Whole-body Counter"

Targeting the residents of the Evacuation Areas and the areas where internal and external exposure doses are likely to be higher than in other areas based on the results of the environmental monitoring survey, etc. (Yamakiya District in Kawamata Town, Iitate Village and Namie Town), the internal exposure measurement using a whole-body counter commenced on June 27, 2011. The targeted areas were expanded sequentially, and the measurements were conducted for a total of 328,354 people by November 30, 2017. For over 99.9% of them, committed effective doses due to Cs-134 and Cs-137 were below 1 mSv and even the maximum measured value was below 3 mSv. Measured values were all unlikely to cause any health effects.

Included in this reference material on March 31, 2013
Updated on December 31, 2017

External Counting Survey

Internal Exposure due to Foods

- Radioactive cesium is eliminated from the body over time.
- The internal exposure measurement using a whole-body counter being conducted at present examines the effects of radiation that is ingested orally on a daily basis.
- Measured values exceeding 1 mSv are considered to be mostly caused by radiation derived from wild plants or animals. Since March 2012, values exceeding 1 mSv have not been detected.

* Reference:p.73 of Vol. 2, "Mushrooms, Mountain Vegetables and Wild Bird and Animal Meat"

Q. What if the measurement using a whole-body counter detected any value exceeding the detection limit?

A. The relevant person may have eaten a lot of foods – not allowed in commercial markets – that contain radioactive cesium at high concentrations, e.g., wild mushrooms, wild plants, wild bird and animal meat (wild boars, bears, etc.).

Prepared based on the following:

Masaharu Tsubokura, et.al. "Reduction of High Levels of Internal Radio-Contamination by Dietary Intervention in Residents of Areas Affected by the Fukushima Daiichi Nuclear Plant Disaster: A Case Series," PLoS One. 2014; 9(6): e100302., US National Library of Medicine, National Institutes of Health, Published online 2014 Jun 16

As radioactive cesium is eliminated from the body over time, the radioactive cesium that people ingested immediately after the earthquake has mostly been eliminated.

The internal exposure measurement using a whole-body counter being conducted at present examines the effects of radiation that is ingested orally on a daily basis. Measured values exceeding 1 mSv per year are considered to be mostly caused by radiation derived from wild plants and animals. As long as people eat only foods distributed through regulated commercial marketplaces, their annual internal doses will not exceed 1 mSv. If the annual internal dose exceeds 1 mSv, the relevant person may have eaten a lot of foods – not allowed in commercial markets – that contain radioactive cesium at high concentrations. In particular, cases have been reported where wild mushrooms are suspected to cause high internal doses.

Included in this reference material on March 31, 2013
Updated on December 31, 2017

External Counting Survey

Self-Protection against Internal Exposure

- General protection against radioactive cesium
  It is very effective to
  → Have knowledge on foods that contain a high level of radioactive cesium
  → Avoid eating the same food continuously
  →Try to eat a variety of foods produced in diverse areas.

- Current status in Fukushima
  → Continued ingestion of radiation is unlikely except from foods.
  → There is no significant difference whether one selects foods and water produced locally or selects those produced in other areas.
- Obtaining accurate information is extremely important.

Prepared based on the material released by the 9th Opinion Exchanges, Foodservice Industry Research Institute (September 3, 2012)

In order to avoid further internal exposure, it is effective to have knowledge on foods that contain a high level of radioactive cesium, avoid eating same food continuously, and try to eat a variety of foods produced in diverse areas. Obtaining accurate information is extremely important.

Included in this reference material on March 31, 2013
Updated on March 31, 2016