

Basic Survey (Radiation Dose Estimates) Reported on 19 May 2014

1. Simplified questionnaire

From the end of November through mid-December in 2013, we sent simplified questionnaires to those eligible for Thyroid Ultrasound Examination (around 250,000 excluding residents of nationally designated zones) who had not yet responded to the original questionnaire.

In addition, surveys were distributed at municipal offices and by mail on request.

As of 31 March 2014, 44,191 have responded to the simplified questionnaire, which increased the response rates to 25.9%, 2.1% up from the previous one.

| Target population | | 2,055,585 | |
|-------------------|---------------------------|-----------|-------|
| Response | Original questionnaire | 487,855 | 23.7% |
| | Simplified questionnaire* | 44,191 | 2.1% |
| | Total | 532,046 | 25.9% |

The following tables show the results of the original and simplified questionnaires combined.

2. Response Rates and Radiation Dose Estimates

2.1 Response Rates of Residents

The overall effective response rate to the Basic Survey (radiation dose estimates), intended for the entire population of Fukushima Prefecture, was 25.9% ($532,046/2,055,585^*$) as of 31 March 2014.

Providing the simplified questionnaires increased the response rates in the Kennan area to the 20% level, and to 19.5% in Aizu and 18.2% in Minami-aizu, where the response rates had been low. The response rate for the Soso area was 45%, with response rates ranging from 50% to 60% by local municipality. (Table 2, Appendix 1)

*The number of people eligible for the Basic Survey was 2,055,585 instead of 2,056,994 in previous surveys after considering overlap and additional participants who were left out. We checked the number of responses, dose estimates, and returned results for duplication in light of this change.

2.2 Radiation Dose Estimates

Recorded movements of respondents are converted to digital data, and effective external cumulative doses are calculated using the dose calculation system developed by the National Institute of Radiological Sciences. Doses have been estimated for 481,420 of 532,046 respondents (90.5%) as of 31 March 2014, and the results have been returned to 471,713 respondents. (Table 2)

| Area(preceding and full-scale surveys) | Target population a | Response b | Response rates c=b/a | Completed dose estimation d | Proportion e=d/b | Returned results f | Proportion g=f/b |
|--|------------------------|---------------|-------------------------|--------------------------------|---------------------|-----------------------|---------------------|
| Kempoku | 504,089 | 144,116 | 28.6% | 134,363 | 93.2% | 131,473 | 91.2% |
| Kenchu | 557,364 | 128,071 | 23.0% | 116,709 | 91.1% | 113,876 | 88.9% |
| Kennan | 152,236 | 31,144 | 20.5% | 27,214 | 87.4% | 26,206 | 84.1% |
| Aizu | 267,219 | 52,163 | 19.5% | 39,698 | 76.1% | 38,094 | 73.0% |
| Minami-aizu | 30,787 | 5,599 | 18.2% | 4,148 | 74.1% | 3,848 | 68.7% |
| Soso | 195,641 | 88,321 | 45.1% | 84,614 | 95.8% | 84,372 | 95.5% |
| Iwaki | 348,249 | 82,632 | 23.7% | 74,674 | 90.4% | 73,844 | 89.4% |
| Total | 2,055,585 | 532,046 | 25.9% | 481,420 | 90.5% | 471,713 | 88.7% |

Including Yamakiya of Kawamata, Namie and litate.

2.3 Response Rates (Visitors)

The survey questionnaire was distributed upon request to non-residents who were visiting or staying in Fukushima Prefecture at the time of the accident. Of 2,077 responses, doses have been estimated for 1,856 respondents (89.4%), and the results shall be returned accordingly. (Table 3)

| Number of request a | Response b | Response rates c=b/a | Completed dose estimation d | Proportion e=d/b | Returned results f | Proportion g=f/b |
|------------------------|---------------|-------------------------|--------------------------------|---------------------|-----------------------|---------------------|
| 3,809 | 2,077 | 54.5% | 1,856 | 89.4% | 1,855 | 89.3% |

3. Results of Radiation Dose Estimates

Radiation doses for a total of 481,420 residents have been estimated to date. The results for 471,565 respondents (excluding radiation workers) suggested that the doses for more than about 90% of the respondents were <2 mSv in Kempoku and Kenchu areas. The doses for approximately 91% of the respondents in Kennan area and more than 99% of those in Aizu and Minami-aizu areas were <1 mSv. Doses for about 78% of respondents in the Soso area and more than 99% of respondents in Iwaki were also <1 mSv. (Table 4)

| Effective Dose (mSv) | Total | Excluding radiation workers | | | | By area (excluding radiation workers) | | | | | | | | | | | | | |
|----------------------|----------------|-----------------------------|---------------|---------------|---------------|---------------------------------------|-------------|----------------|-------------|---------------|-------------|---------------|-------------|--------------|-------------|---------------|-------------|---------------|-------------|
| | | Kempoku * | Kenchu | Kennan | Aizu | Minami-aizu | Soso ** | Iwaki | | | | | | | | | | | |
| <1 | 317,752 | 311,454 | 66.0% | 94.8% | 41,336 | 31.1% | 67,743 | 58.7% | 24,383 | 90.5% | 39,032 | 99.4% | 4,087 | 99.4% | 62,231 | 78.0% | 72,642 | 99.2% | |
| 1-2 | 137,773 | 135,373 | 28.7% | 99.8% | 77,841 | 58.6% | 40,848 | 35.4% | 2,538 | 9.4% | 241 | 0.6% | 26 | 0.6% | 13,298 | 16.7% | 581 | 0.8% | |
| 2-3 | 21,988 | 21,595 | 4.6% | | 4.9% | 13,057 | 9.8% | 6,526 | 5.7% | 13 | 0.0% | 11 | 0.0% | 0 | — | 1,967 | 2.5% | 21 | 0.0% |
| 3-4 | 1,564 | 1,480 | 0.3% | 0.2% | 447 | 0.3% | 315 | 0.3% | 0 | — | 1 | 0.0% | 0 | — | 714 | 0.9% | 3 | 0.0% | |
| 4-5 | 628 | 583 | 0.1% | | 0.2% | 48 | 0.0% | 7 | 0.0% | 0 | — | 0 | — | 0 | — | 526 | 0.7% | 2 | 0.0% |
| 5-6 | 497 | 438 | 0.1% | 0.1% | 26 | 0.0% | 2 | 0.0% | 0 | — | 0 | — | 0 | — | 409 | 0.5% | 1 | 0.0% | |
| 6-7 | 297 | 258 | 0.1% | | 0.1% | 10 | 0.0% | 0 | — | 0 | — | 0 | — | 0 | — | 248 | 0.3% | 0 | — |
| 7-8 | 166 | 128 | 0.0% | 0.0% | 1 | 0.0% | 0 | — | 0 | — | 0 | — | 0 | — | 127 | 0.2% | 0 | — | |
| 8-9 | 124 | 82 | 0.0% | | 0.0% | 0 | — | 0 | — | 0 | — | 0 | — | 0 | — | 82 | 0.1% | 0 | — |
| 9-10 | 79 | 46 | 0.0% | 0.0% | 0 | — | 0 | — | 0 | — | 0 | — | 0 | — | 46 | 0.1% | 0 | — | |
| 10-11 | 78 | 44 | 0.0% | | 0.0% | 0 | — | 0 | — | 0 | — | 0 | — | 0 | — | 44 | 0.1% | 0 | — |
| 11-12 | 56 | 34 | 0.0% | 0.0% | 1 | 0.0% | 0 | — | 0 | — | 0 | — | 0 | — | 33 | 0.0% | 0 | — | |
| 12-13 | 40 | 14 | 0.0% | | 0.0% | 0 | — | 0 | — | 0 | — | 0 | — | 0 | — | 14 | 0.0% | 0 | — |
| 13-14 | 35 | 13 | 0.0% | 0.0% | 0 | — | 0 | — | 0 | — | 0 | — | 0 | — | 13 | 0.0% | 0 | — | |
| 14-15 | 33 | 11 | 0.0% | | 0.0% | 0 | — | 0 | — | 0 | — | 0 | — | 0 | — | 11 | 0.0% | 0 | — |
| 15≤ | 310 | 12 | 0.0% | 0.0% | 0 | — | 0 | — | 0 | — | 0 | — | 0 | — | 12 | 0.0% | 0 | — | |
| Total | 481,420 | 471,565 | 100.0% | 100.0% | 100.0% | 132,767 | 100% | 115,441 | 100% | 26,934 | 100% | 39,285 | 100% | 4,113 | 100% | 79,775 | 100% | 73,250 | 100% |
| Max | 66mSv | 25mSv | | | 11mSv | | 5.9mSv | | 2.6mSv | | 3.6mSv | | 1.6mSv | | 25mSv | | 5.9mSv | | |
| Mean value | 0.8mSv | 0.8mSv | | | 1.2mSv | | 0.9mSv | | 0.5mSv | | 0.2mSv | | 0.1mSv | | 0.7mSv | | 0.3mSv | | |

* Including Yamakiya of Kawamata.
** Including Namie and litate.
Percentages have been rounded and may not total to 100%.

4. Evaluation of the results

The latest effective radiation dose estimates showed similar trends to those observed so far. Since previous epidemiological studies¹ indicate no significant health effects at doses ≤100 mSv, we concluded that radiation doses estimated so far are unlikely to cause adverse effects on health, although this conclusion is based on external radiation doses estimated only for the first four months following the accident.

References

- 1) Sources and effects of ionizing radiation, United Nations Scientific Committee on the Effects of Atomic Radiation, UNSCEAR 2008 Report to the General Assembly, with scientific annexes.

