Basic Survey (Radiation Dose Estimates)

Reported on 12 February 2015

1. Response Rates and Radiation Dose Estimates

1.1 Response Rates of Residents

The overall effective response rate to the Basic Survey (radiation dose estimates), which targeted the entire population of Fukushima Prefecture, was 27.0% (554,241/2,055,383) as of 31 December 2014. Response rate of the simplified questionnaire was 3.1% (63,451/2,055,383). (See Table 1)

Table 1

Response rates to the Basic Survey

As of 31 December 2014

Target population		2,055,383	
Response	Original questionnaire	490,790	23.9%
	Simplified questionnaire*	63,451	3.1%
	Total	554,241	27.0%

*Preliminary figures

Fractions have been rounded.

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

1.2 Radiation Dose Estimates

It has been almost four years since the Great East Japan Earthquake and the Fukushima Daiichi nuclear disaster, and we continue to receive responses from participants. Doses have been estimated for 536,394 of 554,241 respondents (96.8%) as of 31 December 2014, and the results have been returned to 531,454 respondents. (See Table 2)

The number of returned results has increased by 19,260 since 31 October 2014.

Table 2

Response rates to the Basic Survey

As of 31 December 2014

Area(preceding and full-scale surveys)	Target population a	Responses b	Response rate c=b/a	Completed dose estimates d	Proportion e=d/b	Returned results f	Proportion g=f/b
Kempoku	504,062	150,493	29.9%	146,074	97.1%	144,569	96.1%
Kenchu	557,266	132,179	23.7%	128,633	97.3%	127,849	96.7%
Kennan	152,229	33,465	22.0%	32,360	96.7%	31,955	95.5%
Aizu	267,205	55,907	20.9%	53,301	95.3%	52,482	93.9%
Minami-aizu	30,787	6,171	20.0%	5,795	93.9%	5,726	92.8%
Soso	195,608	88,916	45.5%	86,268	97.0%	86,099	96.8%
Iwaki	348,226	87,110	25.0%	83,963	96.4%	82,774	95.0%
Total	2,055,383	554,241	27.0%	536,394	96.8%	531,454	95.9%

Including Yamakiya of Kawamata, Namie and Iitate.

We have been estimating doses for non-residents who were visiting or staying in Fukushima Prefecture at the time of the accident. (See Table 3)

Table 3 Response rates to the Basic Survey (Visitors) As of 31 December 2014

Number of requests a	Responses b	Response rate c=b/a	Completed dose estimates d	Proportion e=d/b	Returned results f	Proportion g=f/b
3,875	2,137	55.1%	1,879	87.9%	1,869	87.5%

2. Results of Radiation Dose Estimates

Table 4 shows the numbers of completed dose estimates (see Table 2) —excluding the data in the estimation period less than four months—within a range of values.

Radiation doses for a total of 457,859 residents have been estimated to date. The results for 448,948 respondents (excluding radiation workers) suggest that the doses for about 87% of the respondents in Kempoku area and about 92% in Kenchu area were <2 mSv. The doses for approximately 88% 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 Estimated external radiation doses (preceding and full-scale survey) As of 31 December 2014

Effective Dose (mSv)	Total	Excluding radiation workers				By area (excluding radiation workers)													
						Kempoku *		Kenchu		Kennan		Aizu		Minami-aizu		Soso **		Iwaki	
<1	284,668	279,118	62.2%	93.9%		24,590	20.2%	55,961	51.6%	24,353	88.4%	43,496	99.3%	4,672	99.3%	55,144	77.6%	70,902	99.1%
1-2	144,618	142,344	31.7%			81,671	67.0%	44,184	40.8%	3,182	11.5%	279	0.6%	34	0.7%	12,377	17.4%	617	0.9%
2-3	24,954	24,597	5.5%	5.8%	99.8%	15,057	12.4%	7,827	7.2%	17	0.1%	21	0.0%	0	-	1,647	2.3%	28	0.0%
3-4	1,532	1,457	0.3%			457	0.4%	413	0.4%	0	-	1	0.0%	0	-	583	0.8%	3	0.0%
4-5	537	495	0.1%	0.2%		39	0.0%	5	0.0%	0	-	0	-	0	-	450	0.6%	1	0.0%
5-6	429	376	0.1%			18	0.0%	3	0.0%	0	-	0	-	0	-	354	0.5%	1	0.0%
6-7	265	227	0.1%	0.1%		10	0.0%	1	0.0%	0	-	1	0.0%	0	-	215	0.3%	0	-
7-8	151	114	0.0%		0.2%	1	0.0%	0	-	0	-	0	-	0	-	113	0.2%	0	-
8-9	113	73	0.0%	0.0%		1	0.0%	0	-	0	-	0	-	0	-	72	0.1%	0	-
9-10	69	39	0.0%			0	-	0	-	0	-	0	-	0	-	39	0.1%	0	-
10-11	66	34	0.0%	0.0%		0	-	0	-	0	-	0	-	0	-	34	0.0%	0	-
11-12	52	31	0.0%			1	0.0%	0	-	0	-	0	-	0	-	30	0.0%	0	-
12-13	36	13	0.0%	0.0%	0.0%	0	-	0	-	0	-	0	-	0	-	13	0.0%	0	-
13-14	34	12	0.0%			0	-	0	-	0	-	0	-	0	-	12	0.0%	0	-
14-15	27	6	0.0%	0.0%		0	-	0	-	0	-	0	-	0	-	6	0.0%	0	-
≥15	308	12	0.0%		0.0%	0	-	0	-	0	-	0	-	0	-	12	0.0%	0	-
Total	457,859	448,948	100.0%	100.0%	100.0%	121,845	100%	108,394	100%	27,552	100%	43,798	100%	4,706	100%	71,101	100%	71,552	100%
Max	66mSv	25mSv				11mSv		6.3mSv		2.6mSv		6.0mSv		1.9mSv		25mSv		5.9mSv	
Mean value	0.9mSv	0.8mSv				1.4mSv		1.0mSv		0.6mSv		0.2mSv		0.1mSv		0.8mSv		0.3mSv	

* Including Yamakiya of Kawamata.

** Including Namie and Iitate.

Percentages have been rounded and may not total to 100%.

Excluding those with estimation period less than four months.

3. Evaluation of the results

The latest effective radiation dose estimates showed similar trends to those observed so far.

Since previous epidemiological studies[1] 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.