

Exposure Dose Distribution

1. Effective Dose from External Exposure

Table 1 shows the distribution of external exposure dose of workers who were involved in radiation work at the Fukushima Daiichi Nuclear Power Station for the past three month.

Table 1. External Exposure Dose

Dose Ranges (mSv)	May 2017			June 2017			July 2017		
	TEPCO Employees	Contractors	Total	TEPCO Employees	Contractors	Total	TEPCO Employees	Contractors	Total
Above 100	0	0	0	0	0	0	0	0	0
75-100	0	0	0	0	0	0	0	0	0
50-75	0	0	0	0	0	0	0	0	0
20-50	0	0	0	0	0	0	0	0	0
10-20	0	0	0	0	9	9	0	0	0
5-10	0	78	78	0	64	64	0	43	43
1-5	12	713	725	26	890	916	13	796	809
1 or less	1023	7247	8270	1023	7301	8324	910	7173	8083
Total	1035	8038	9073	1049	8264	9313	923	8012	8935
Maximum (mSv)	2.40	8.80	8.80	3.30	12.90	12.90	3.65	9.77	9.77
Average (mSv)	0.13	0.39	0.36	0.16	0.45	0.42	0.12	0.37	0.35

• The values of the exposure dose and the number of the workers in the table above are subject to change, because there are times when APD data are replaced with monthly dose data measured by integral dosimeters. Or dose data of workers who wore only an integral dosimeter (ex., workers who entered only the Main Anti-earthquake Building) need to be updated in the table after the publication of the data.

2. Sum of External and Internal Exposure Dose (Effective Dose)

Table 2 shows the distribution of cumulative exposure dose of workers who are involved in radiation work at Fukushima Daiichi for five years, starting on April 1, 2016. Table 3 shows the distribution of cumulative exposure dose in the fiscal year of 2017. Two different periods of time are shown in the Table 2: from April 1, 2016 to June 30, 2017 and from April 1, 2016 to July 31, 2017, and Table 3: from April 1, 2017 to June 30, 2017 and from April 1, 2017 to July 31, 2017 for comparison.

Table 2. Cumulative Exposure Dose for Five Years

Dose Ranges (mSv)	April 2016 - June 2017			April 2016 - July 2017			Difference		
	TEPCO Employees	Contractors	Total	TEPCO Employees	Contractors	Total	TEPCO Employees	Contractors	Total
Above 100	0	0	0	0	0	0	0	0	0
75-100	0	0	0	0	0	0	0	0	0
50-75	0	1	1	0	4	4	0	3	3
20-50	0	433	433	0	499	499	0	66	66
10-20	41	1323	1364	48	1359	1407	7	36	43
5-10	106	1535	1641	109	1579	1688	3	44	47
1-5	440	4517	4957	459	4539	4998	19	22	41
1 or less	1125	7305	8430	1159	7386	8545	34	81	115
Total	1712	15114	16826	1775	15366	17141	63	252	315
Maximum (mSv)	16.95	50.23	50.23	17.75	52.04	52.04	-	-	-
Average (mSv)	1.52	3.60	3.39	1.53	3.73	3.51	-	-	-

• The values of the exposure dose and the number of the workers in the table above are subject to change, because there are times when APD data are replaced with monthly dose data measured by integral dosimeters. Or dose data of workers who wore only an integral dosimeter (ex., workers who entered only the Main Anti-earthquake Building) need to be updated in the table after the publication of the data.

• No significant internal exposure has been reported since October 2011.

Table 3. Cumulative Exposure Dose in the Fiscal Year of 2017

Dose Ranges (mSv)	April 2017 - June 2017			April 2017 - July 2017			Difference		
	TEPCO Employees	Contractors	Total	TEPCO Employees	Contractors	Total	TEPCO Employees	Contractors	Total
Above 100	0	0	0	0	0	0	0	0	0
75-100	0	0	0	0	0	0	0	0	0
50-75	0	0	0	0	0	0	0	0	0
20-50	0	2	2	0	13	13	0	11	11
10-20	0	137	137	0	206	206	0	69	69
5-10	2	442	444	6	587	593	4	145	149
1-5	143	1556	1699	176	1946	2122	33	390	423
1 or less	1067	7528	8595	1119	7381	8500	52	-147	-95
Total	1212	9665	10877	1301	10133	11434	89	468	557
Maximum (mSv)	5.10	20.56	20.56	6.09	24.44	24.44	-	-	-
Average (mSv)	0.39	1.10	1.02	0.45	1.34	1.24	-	-	-

• The values of the exposure dose and the number of the workers in the table above are subject to change, because there are times when APD data are replaced with monthly dose data measured by integral dosimeters. Or dose data of workers who wore only an integral dosimeter (ex., workers who entered only the Main Anti-earthquake Building) need to be updated in the table after the publication of the data.

3. Sum of External and Internal Exposure Dose of Workers Exposed to Especially High Radiation (Effective Dose)

Table 4 shows the distribution of cumulative exposure dose of workers exposed to especially high radiation.*¹

Table 4. Cumulative Exposure Dose (workers exposed to especially high radiation)

Dose Ranges (mSv)	March 2011 - September 2015
Above 100	1
75-100	191
50-75	233
20-50	267
10-20	186
5-10	129
1-5	145
1 or less	51
Total	1203
Maximum (mSv)	102.69
Average (mSv)	36.49

(Since October 2015, TEPCO Holdings has opted not to report to the Labour Standards Inspection Office about workers exposed to especially high radiation.)

*1. Workers exposed to especially high radiation means workers who are involved in operations in which they could be exposed to the emergency exposure dose limit (100mSv), which is stipulated in "Ordinance on Prevention of Ionizing Radiation Hazards, Chapter 7." In more detail, they are workers engaged in the work to maintain the function of the cooling facility to cool down the reactor facility or the spent fuel tank in the reactor facility, the steam turbine and its related facilities or the surrounding area where the radiation doses exceed 0.1mSv/h. Or they are workers who would engage in keeping running the function to control or prevent the release of a large number of radioactive materials should it be likely to occur due to malfunction or damage of the reactor facility.

So far workers who have worked as "workers exposed to especially high radiation" are all TEPCO employees.

*2. The number of "workers exposed to especially high radiation" each month is the number of the workers who reported working as such workers in a given month and were engaged in that work. The figures in the cumulative data during the period from March 2011 to September

2015 in Table 4 above include the numbers of workers who have been reported to work as “workers exposed to especially high radiation” at least once.

*3. The values of the exposure dose and the number of the workers in the table above are subject to change, because there are times when APD data are replaced with monthly dose data measured by integral dosimeters. Or the dose data of workers who wore only an integral dosimeter (ex., workers who entered only the Main Anti-earthquake Building) need to be updated in the table after the publication of the data.

*4. The figure shown in the dose range, “Above 100mSv,” in the cumulative data during the period from March 2011 to September 2015 is the figure when the March 2011 data of the internal exposure dose were reevaluated in July 2013.

4. Equivalent Dose

Table 5 and Table 6 show equivalent dose to the skin and the lens of the eyes of the workers, respectively, who were involved in radiation work at the Fukushima Daiichi Nuclear Power Station for the past three months.

Table 5. Equivalent Dose to the Skin

Dose Ranges (mSv)	May 2017			June 2017			July 2017		
	TEPCO Employees	Contractors	Total	TEPCO Employees	Contractors	Total	TEPCO Employees	Contractors	Total
Above 500	0	0	0	0	0	0	0	0	0
300-500	0	0	0	0	0	0	0	0	0
250-300	0	0	0	0	0	0	0	0	0
200-250	0	0	0	0	0	0	0	0	0
150-200	0	0	0	0	0	0	0	0	0
100-150	0	0	0	0	0	0	0	0	0
75-100	0	0	0	0	0	0	0	0	0
50-75	0	0	0	0	0	0	0	0	0
20-50	0	0	0	0	5	5	0	0	0
10-20	0	9	9	0	44	44	0	5	5
5-10	0	133	133	0	176	176	0	91	91
1-5	19	921	940	34	1039	1073	14	976	990
1 or less	1016	6975	7991	1015	7000	8015	909	6940	7849
Total	1035	8038	9073	1049	8264	9313	923	8012	8935
Maximum (mSv)	3.30	16.60	16.60	4.30	22.20	22.20	3.65	14.93	14.93
Average (mSv)	0.14	0.52	0.48	0.18	0.68	0.62	0.13	0.48	0.44

• The values of the exposure dose and the number of the workers in the table above are subject to change, because there are times when APD data are replaced with monthly dose data measured by integral dosimeters. Or the dose data of workers who wore only an integral dosimeter (ex., workers who entered only the Main Anti-earthquake Building) need to be updated in the table after the publication of the data.

• Equivalent dose is a measure of the radiation dose to organs and tissues, and the equivalent dose limit to the skin is 500mSv/year (the emergency exposure dose limit is 1Sv).

• Equivalent dose to the skin is measured at a depth of 70 micrometers from the skin surface. When the equivalent dose is measured with a dosimeter other than the one put on around the chest and the abdomen, for example, a finger dosimeter, the maximum measurement value is counted as the equivalent dose.

Table 6. Equivalent Dose to the Lens of the Eyes

Dose Ranges (mSv)	May 2017			June 2017			July 2017		
	TEPCO Employees	Contractors	Total	TEPCO Employees	Contractors	Total	TEPCO Employees	Contractors	Total
Above 150	0	0	0	0	0	0	0	0	0
100-150	0	0	0	0	0	0	0	0	0
75-100	0	0	0	0	0	0	0	0	0
50-75	0	0	0	0	0	0	0	0	0
20-50	0	0	0	0	5	5	0	0	0
10-20	0	5	5	0	32	32	0	5	5
5-10	0	119	119	0	139	139	0	91	91
1-5	13	859	872	27	1017	1044	14	976	990
1 or less	1022	7055	8077	1022	7071	8093	909	6940	7849
Total	1035	8038	9073	1049	8264	9313	923	8012	8935
Maximum (mSv)	2.70	12.50	12.50	4.30	20.90	20.90	3.65	14.93	14.93
Average (mSv)	0.13	0.48	0.44	0.16	0.62	0.56	0.13	0.48	0.44

• The values of the exposure dose and the number of the workers in the table above are subject to change, because there are times when APD data are replaced with monthly dose data measured by integral dosimeters. Or the dose data of workers who wore only an integral dosimeter (ex., workers who entered only the Main Anti-earthquake Building) need to be updated in the table after the publication of the data.

• Equivalent dose is a measure of the radiation dose to organs and tissues, and the equivalent dose limit to the lens of the eye is 150mSv/year (the emergency exposure dose limit is 300mSv).

• The equivalent dose to the lens of the eyes is measured at a depth of 70 micrometers from the skin surface using a dosimeter put on around the chest or the abdomen, and thus the shielding effect of face masks is not taken into consideration.

5. Cumulative Equivalent Dose

Table 7 and Table 8 show the distribution of cumulative equivalent dose to the skins and the lens of the eyes of the workers, respectively, who were involved in radiation work at the Fukushima Daiichi Nuclear Power Station during two different periods of time, from April 1, 2017 to June 30, 2017 and from April 1, 2017 to July 31, 2017 for comparison.

Table 7. Equivalent Dose to the Skin

Dose Ranges (mSv)	April 2017 - June 2017			April 2017 - July 2017			Difference		
	TEPCO Employees	Contractors	Total	TEPCO Employees	Contractors	Total	TEPCO Employees	Contractors	Total
Above 500	0	0	0	0	0	0	0	0	0
300-500	0	0	0	0	0	0	0	0	0
250-300	0	0	0	0	0	0	0	0	0
200-250	0	0	0	0	0	0	0	0	0
150-200	0	0	0	0	0	0	0	0	0
100-150	0	0	0	0	0	0	0	0	0
75-100	0	0	0	0	0	0	0	0	0
50-75	0	1	1	0	4	4	0	3	3
20-50	0	65	65	0	108	108	0	43	43
10-20	1	291	292	1	353	354	0	62	62
5-10	7	515	522	12	656	668	5	141	146
1-5	146	1775	1921	174	2137	2311	28	362	390
1 or less	1058	7018	8076	1114	6875	7989	56	-143	-87
Total	1212	9665	10877	1301	10133	11434	89	468	557
Maximum (mSv)	11.60	62.00	62.00	12.54	64.67	64.67	-	-	-
Average (mSv)	0.44	1.61	1.48	0.49	1.91	1.75	-	-	-

• The values of the exposure dose and the number of the workers in the table above are subject to change, because there are times when APD data are replaced with monthly dose data measured by integral dosimeters. Or the dose data of workers who wore only an integral dosimeter (ex., workers who entered only the Main Anti-earthquake Building) need to be updated in the table after the publication of the data.

Table 8. Equivalent Dose to the Lens of the Eyes

Dose Ranges (mSv)	April 2017 - June 2017			April 2017 - July 2017			Difference		
	TEPCO Employees	Contractors	Total	TEPCO Employees	Contractors	Total	TEPCO Employees	Contractors	Total
Above 150	0	0	0	0	0	0	0	0	0
100-150	0	0	0	0	0	0	0	0	0
75-100	0	0	0	0	0	0	0	0	0
50-75	0	0	0	0	3	3	0	3	3
20-50	0	57	57	0	94	94	0	37	37
10-20	0	235	235	0	313	313	0	78	78
5-10	4	494	498	10	630	640	6	136	142
1-5	144	1713	1857	173	2080	2253	29	367	396
1 or less	1064	7166	8230	1118	7013	8131	54	-153	-99
Total	1212	9665	10877	1301	10133	11434	89	468	557
Maximum (mSv)	7.20	48.50	48.50	8.14	56.80	56.80	-	-	-
Average (mSv)	0.40	1.47	1.35	0.46	1.78	1.63	-	-	-

• The values of the exposure dose and the number of the workers in the table above are subject to change, because there are times when APD data are replaced with monthly dose data measured by integral dosimeters. Or the dose data of workers who wore only an integral dosimeter (ex., workers who entered only the Main Anti-earthquake Building) need to be updated in the table after the publication of the data.