

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)	June 2017			July 2017			August 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	9	9	0	2	2	0	0	0
5-10	0	64	64	0	55	55	0	12	12
1-5	26	890	916	14	847	861	16	584	600
1 or less	1023	7301	8324	1001	7211	8212	911	7151	8062
Total	1049	8264	9313	1015	8115	9130	927	7747	8674
Maximum (mSv)	3.30	12.90	12.90	3.80	11.50	11.50	2.83	7.08	7.08
Average (mSv)	0.16	0.45	0.42	0.13	0.42	0.39	0.12	0.28	0.26

• 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 July 31, 2017 and from April 1, 2016 to August 31, 2017, and Table 3: from April 1, 2017 to July 31, 2017 and from April 1, 2017 to August 31, 2017 for comparison.

Table 2. Cumulative Exposure Dose for Five Years

Dose Ranges (mSv)	April 2016 - July 2017			April 2016 - August 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	4	4	0	6	6	0	2	2
20-50	0	507	507	0	562	562	0	55	55
10-20	48	1364	1412	53	1381	1434	5	17	22
5-10	109	1582	1691	112	1631	1743	3	49	52
1-5	456	4540	4996	470	4517	4987	14	-23	-9
1 or less	1170	7374	8544	1168	7480	8648	-2	106	104
Total	1783	15371	17154	1803	15577	17380	20	206	226
Maximum (mSv)	17.75	52.19	52.19	18.50	53.40	53.40	-	-	-
Average (mSv)	1.53	3.76	3.53	1.58	3.85	3.61	-	-	-

• 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 - July 2017			April 2017 - August 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	14	14	0	19	19	0	5	5
10-20	0	223	223	0	307	307	0	84	84
5-10	6	598	604	14	664	678	8	66	74
1-5	174	1922	2096	197	2227	2424	23	305	328
1 or less	1141	7382	8523	1139	7221	8360	-2	-161	-163
Total	1321	10139	11460	1350	10438	11788	29	299	328
Maximum (mSv)	6.31	25.53	25.53	6.84	28.80	28.80	-	-	-
Average (mSv)	0.46	1.38	1.28	0.53	1.55	1.43	-	-	-

• 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)	June 2017			July 2017			August 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	5	5	0	2	2	0	0	0
10-20	0	44	44	1	24	25	0	3	3
5-10	0	176	176	0	153	153	1	42	43
1-5	34	1039	1073	18	1031	1049	17	717	734
1 or less	1015	7000	8015	996	6905	7901	909	6985	7894
Total	1049	8264	9313	1015	8115	9130	927	7747	8674
Maximum (mSv)	4.30	22.20	22.20	10.40	29.40	29.40	5.16	10.77	10.77
Average (mSv)	0.18	0.68	0.62	0.15	0.62	0.57	0.13	0.36	0.33

• 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)	June 2017			July 2017			August 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	5	5	0	0	0	0	0	0
10-20	0	32	32	0	6	6	0	3	3
5-10	0	139	139	0	102	102	1	42	43
1-5	27	1017	1044	16	1039	1055	17	717	734
1 or less	1022	7071	8093	999	6968	7967	909	6985	7894
Total	1049	8264	9313	1015	8115	9130	927	7747	8674
Maximum (mSv)	4.30	20.90	20.90	3.80	14.00	14.00	5.16	10.77	10.77
Average (mSv)	0.16	0.62	0.56	0.13	0.53	0.49	0.13	0.36	0.33

• 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 July 31, 2017 and from April 1, 2017 to August 31, 2017 for comparison.

Table 7. Equivalent Dose to the Skin

Dose Ranges (mSv)	April 2017 - July 2017			April 2017 - August 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	4	4	0	7	7	0	3	3
20-50	0	120	120	0	151	151	0	31	31
10-20	2	402	404	3	462	465	1	60	61
5-10	13	664	677	18	737	755	5	73	78
1-5	173	2116	2289	198	2366	2564	25	250	275
1 or less	1133	6833	7966	1131	6715	7846	-2	-118	-120
Total	1321	10139	11460	1350	10438	11788	29	299	328
Maximum (mSv)	13.50	67.90	67.90	13.93	70.47	70.47	-	-	-
Average (mSv)	0.52	2.03	1.85	0.59	2.23	2.05	-	-	-

• 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 - July 2017			April 2017 - August 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	3	3	0	6	6	0	3	3
20-50	0	95	95	0	107	107	0	12	12
10-20	0	324	324	0	416	416	0	92	92
5-10	10	650	660	17	726	743	7	76	83
1-5	170	2067	2237	196	2317	2513	26	250	276
1 or less	1141	7000	8141	1137	6866	8003	-4	-134	-138
Total	1321	10139	11460	1350	10438	11788	29	299	328
Maximum (mSv)	8.30	56.80	56.80	9.57	65.97	65.97	-	-	-
Average (mSv)	0.47	1.83	1.67	0.55	2.04	1.87	-	-	-

• 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.