

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 months.

Table 1. External Exposure Dose

Dose Ranges (mSv)	September 2017			October 2017			November 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	2	2	0	0	0
5-10	0	16	16	0	32	32	0	36	36
1-5	15	657	672	29	715	744	22	617	639
1 or less	1033	7082	8115	1051	6887	7938	945	6899	7844
Total	1048	7755	8803	1080	7636	8716	967	7552	8519
Maximum (mSv)	3.30	7.50	7.50	2.50	10.30	10.30	2.29	9.72	9.72
Average (mSv)	0.11	0.32	0.30	0.13	0.37	0.34	0.12	0.33	0.30

• 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 October 31, 2017 and from April 1, 2016 to November 30, 2017, and Table 3: from April 1, 2017 to October 31, 2017 and from April 1, 2017 to November 30, 2017 for comparison.

Table 2. Cumulative Exposure Dose for Five Years

Dose Ranges (mSv)	April 2016 - October 2017			April 2016 - November 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	8	8	0	11	11	0	3	3
20-50	1	661	662	2	711	713	1	50	51
10-20	64	1449	1513	70	1514	1584	6	65	71
5-10	125	1755	1880	128	1775	1903	3	20	23
1-5	466	4539	5005	467	4518	4985	1	-21	-20
1 or less	1223	7655	8878	1218	7759	8977	-5	104	99
Total	1879	16067	17946	1885	16288	18173	6	221	227
Maximum (mSv)	20.41	57.51	57.51	22.38	58.81	58.81	-	-	-
Average (mSv)	1.66	4.08	3.83	1.72	4.18	3.92	-	-	-

• 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 - October 2017			April 2017 - November 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	40	40	0	48	48	0	8	8
10-20	1	504	505	2	612	614	1	108	109
5-10	29	821	850	41	859	900	12	38	50
1-5	252	2792	3044	258	3015	3273	6	223	229
1 or less	1179	6996	8175	1174	6924	8098	-5	-72	-77
Total	1461	11153	12614	1475	11458	12933	14	305	319
Maximum (mSv)	11.39	29.57	29.57	11.72	29.57	29.57	-	-	-
Average (mSv)	0.68	1.95	1.81	0.76	2.12	1.96	-	-	-

• 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)	September 2017			October 2017			November 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	0	0	0	1	1
10-20	0	5	5	0	17	17	0	8	8
5-10	0	95	95	0	87	87	0	99	99
1-5	17	854	871	38	961	999	25	833	858
1 or less	1031	6801	7832	1042	6571	7613	942	6611	7553
Total	1048	7755	8803	1080	7636	8716	967	7552	8519
Maximum (mSv)	3.30	13.50	13.50	4.70	19.00	19.00	2.49	20.21	20.21
Average (mSv)	0.12	0.47	0.43	0.16	0.53	0.49	0.13	0.47	0.43

• 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 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)	September 2017			October 2017			November 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	0	0	0	1	1
10-20	0	2	2	0	4	4	0	8	8
5-10	0	55	55	0	73	73	0	99	99
1-5	15	822	837	32	890	922	25	833	858
1 or less	1033	6876	7909	1048	6669	7717	942	6611	7553
Total	1048	7755	8803	1080	7636	8716	967	7552	8519
Maximum (mSv)	3.30	13.50	13.50	2.50	12.10	12.10	2.49	20.21	20.21
Average (mSv)	0.12	0.42	0.38	0.14	0.47	0.43	0.13	0.47	0.43

• 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 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 October 31, 2017 and from April 1, 2017 to November 30, 2017 for comparison.

Table 7. Equivalent Dose to the Skin

Dose Ranges (mSv)	April 2017 - October 2017			April 2017 - November 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	2	2	0	3	3	0	1	1
50-75	0	14	14	0	23	23	0	9	9
20-50	0	255	255	0	273	273	0	18	18
10-20	6	669	675	8	790	798	2	121	123
5-10	34	912	946	49	934	983	15	22	37
1-5	251	2758	3009	254	2899	3153	3	141	144
1 or less	1170	6543	7713	1164	6536	7700	-6	-7	-13
Total	1461	11153	12614	1475	11458	12933	14	305	319
Maximum (mSv)	18.65	85.30	85.30	19.19	87.96	87.96	-	-	-
Average (mSv)	0.77	2.86	2.62	0.85	3.10	2.84	-	-	-

• 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 - October 2017			April 2017 - November 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	1	1	0	2	2	0	1	1
50-75	0	10	10	0	20	20	0	10	10
20-50	0	171	171	0	176	176	0	5	5
10-20	3	602	605	5	735	740	2	133	135
5-10	30	912	942	43	960	1003	13	48	61
1-5	251	2771	3022	258	2919	3177	7	148	155
1 or less	1177	6686	7863	1169	6646	7815	-8	-40	-48
Total	1461	11153	12614	1475	11458	12933	14	305	319
Maximum (mSv)	11.39	83.20	83.20	11.82	85.86	85.86	-	-	-
Average (mSv)	0.71	2.56	2.35	0.79	2.80	2.57	-	-	-

• 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.