

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)	November 2017			December 2017			January 2018		
	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	5	5	0	1	1	0	1	1
5-10	0	35	35	0	18	18	0	25	25
1-5	23	660	683	22	578	600	23	601	624
1 or less	1026	6874	7900	976	6683	7659	856	6438	7294
Total	1049	7574	8623	998	7280	8278	879	7065	7944
Maximum (mSv)	2.40	11.20	11.20	2.60	10.31	10.31	4.14	10.16	10.16
Average (mSv)	0.12	0.37	0.34	0.14	0.32	0.30	0.14	0.32	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 December 31, 2017 and from April 1, 2016 to January 31, 2018, and Table 3: from April 1, 2017 to December 31, 2017 and from April 1, 2017 to January 31, 2018 for comparison.

Table 2. Cumulative Exposure Dose for Five Years

Dose Ranges (mSv)	April 2016 - December 2017			April 2016 - January 2018			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	13	13	0	13	13	0	0	0
20-50	2	771	773	4	822	826	2	51	53
10-20	77	1543	1620	84	1578	1662	7	35	42
5-10	128	1815	1943	126	1864	1990	-2	49	47
1-5	474	4517	4991	483	4516	4999	9	-1	8
1 or less	1215	7797	9012	1205	7841	9046	-10	44	34
Total	1896	16456	18352	1902	16634	18536	6	178	184
Maximum (mSv)	22.88	60.44	60.44	23.35	61.81	61.81	-	-	-
Average (mSv)	1.79	4.30	4.04	1.85	4.39	4.13	-	-	-

• 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 - December 2017			April 2017 - January 2018			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	60	60	0	65	65	0	5	5
10-20	2	734	736	5	825	830	3	91	94
5-10	49	886	935	59	963	1022	10	77	87
1-5	280	3177	3457	287	3269	3556	7	92	99
1 or less	1168	6835	8003	1156	6819	7975	-12	-16	-28
Total	1499	11692	13191	1507	11941	13448	8	249	257
Maximum (mSv)	12.00	29.57	29.57	13.73	29.57	29.57	-	-	-
Average (mSv)	0.84	2.30	2.14	0.92	2.45	2.27	-	-	-

• 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)	November 2017			December 2017			January 2018		
	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	1	1	0	0	0	0	0	0
10-20	0	36	36	0	8	8	0	3	3
5-10	0	124	124	0	76	76	1	47	48
1-5	34	927	961	32	814	846	27	747	774
1 or less	1015	6486	7501	966	6382	7348	851	6268	7119
Total	1049	7574	8623	998	7280	8278	879	7065	7944
Maximum (mSv)	3.10	20.40	20.40	4.60	12.90	12.90	6.84	11.82	11.82
Average (mSv)	0.14	0.59	0.54	0.16	0.48	0.44	0.15	0.39	0.37

• 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)	November 2017			December 2017			January 2018		
	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	1	1	0	0	0	0	0	0
10-20	0	28	28	0	3	3	0	3	3
5-10	0	87	87	0	64	64	1	47	48
1-5	26	886	912	29	732	761	27	747	774
1 or less	1023	6572	7595	969	6481	7450	851	6268	7119
Total	1049	7574	8623	998	7280	8278	879	7065	7944
Maximum (mSv)	2.60	20.40	20.40	2.60	12.70	12.70	6.84	11.82	11.82
Average (mSv)	0.12	0.53	0.48	0.14	0.43	0.39	0.15	0.39	0.37

• 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 December 31, 2017 and from April 1, 2017 to January 31, 2018 for comparison.

Table 7. Equivalent Dose to the Skin

Dose Ranges (mSv)	April 2017 - December 2017			April 2017 - January 2018			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	4	4	0	4	4	0	0	0
50-75	0	33	33	0	38	38	0	5	5
20-50	1	320	321	1	347	348	0	27	27
10-20	11	898	909	12	973	985	1	75	76
5-10	54	994	1048	65	1064	1129	11	70	81
1-5	275	2970	3245	280	3021	3301	5	51	56
1 or less	1158	6473	7631	1149	6494	7643	-9	21	12
Total	1499	11692	13191	1507	11941	13448	8	249	257
Maximum (mSv)	24.55	93.30	93.30	31.39	95.64	95.64	-	-	-
Average (mSv)	0.96	3.42	3.14	1.04	3.58	3.29	-	-	-

• 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 - December 2017			April 2017 - January 2018			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	3	3	0	3	3	0	0	0
50-75	0	31	31	0	33	33	0	2	2
20-50	0	201	201	0	221	221	0	20	20
10-20	6	845	851	8	940	948	2	95	97
5-10	49	1001	1050	60	1080	1140	11	79	90
1-5	278	3019	3297	286	3069	3355	8	50	58
1 or less	1166	6592	7758	1153	6595	7748	-13	3	-10
Total	1499	11692	13191	1507	11941	13448	8	249	257
Maximum (mSv)	13.00	86.10	86.10	17.33	86.10	86.10	-	-	-
Average (mSv)	0.87	3.05	2.81	0.96	3.22	2.97	-	-	-

• 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.