

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)	January 2018			February 2018			March 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	1	1	0	0	0	0	0	0
5-10	0	23	23	0	56	56	0	53	53
1-5	24	614	638	50	791	841	43	756	799
1 or less	914	6444	7358	941	6353	7294	893	6408	7301
Total	938	7082	8020	991	7200	8191	936	7217	8153
Maximum (mSv)	4.14	10.60	10.60	3.83	9.80	9.80	2.96	8.44	8.44
Average (mSv)	0.13	0.35	0.32	0.21	0.43	0.41	0.17	0.41	0.38

• 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 February 28, 2018 and from April 1, 2016 to March 31, 2018, and Table 3: from April 1, 2017 to February 28, 2018 and from April 1, 2017 to March 31, 2018 for comparison.

Table 2. Cumulative Exposure Dose for Five Years

Dose Ranges (mSv)	April 2016 - February 2018			April 2016 - March 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	16	16	0	22	22	0	6	6
20-50	7	879	886	8	925	933	1	46	47
10-20	92	1658	1750	93	1743	1836	1	85	86
5-10	126	1893	2019	143	1919	2062	17	26	43
1-5	496	4492	4988	495	4449	4944	-1	-43	-44
1 or less	1185	7868	9053	1176	7954	9130	-9	86	77
Total	1906	16806	18712	1915	17012	18927	9	206	215
Maximum (mSv)	23.65	63.63	63.63	24.02	68.28	68.28	-	-	-
Average (mSv)	1.95	4.54	4.28	2.02	4.66	4.39	-	-	-

• 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 - February 2018			April 2017 - March 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	68	68	0	72	72	0	4	4
10-20	13	985	998	18	1133	1151	5	148	153
5-10	71	1004	1075	85	1030	1115	14	26	40
1-5	304	3511	3815	305	3530	3835	1	19	20
1 or less	1127	6600	7727	1121	6648	7769	-6	48	42
Total	1515	12168	13683	1529	12413	13942	14	245	259
Maximum (mSv)	15.24	29.57	29.57	15.85	32.32	32.32	-	-	-
Average (mSv)	1.05	2.67	2.49	1.14	2.86	2.67	-	-	-

• 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)	January 2018			February 2018			March 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	0	0	0	1	1	0	0	0
10-20	1	15	16	0	24	24	0	4	4
5-10	0	82	82	2	142	144	0	108	108
1-5	30	821	851	70	968	1038	46	918	964
1 or less	907	6164	7071	919	6065	6984	890	6187	7077
Total	938	7082	8020	991	7200	8191	936	7217	8153
Maximum (mSv)	11.20	17.00	17.00	9.10	22.00	22.00	2.96	11.79	11.79
Average (mSv)	0.16	0.51	0.47	0.26	0.63	0.59	0.17	0.53	0.49

• 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)	January 2018			February 2018			March 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	0	0	0	0	0	0	0	0
10-20	0	3	3	0	1	1	0	4	4
5-10	1	43	44	0	93	93	0	108	108
1-5	27	775	802	56	952	1008	46	918	964
1 or less	910	6261	7171	935	6154	7089	890	6187	7077
Total	938	7082	8020	991	7200	8191	936	7217	8153
Maximum (mSv)	6.80	12.40	12.40	4.00	10.60	10.60	2.96	11.79	11.79
Average (mSv)	0.15	0.43	0.39	0.22	0.53	0.49	0.17	0.53	0.49

• 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 February 28, 2018 and from April 1, 2017 to March 31, 2018 for comparison.

Table 7. Equivalent Dose to the Skin

Dose Ranges (mSv)	April 2017 - February 2018			April 2017 - March 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	1	1	0	1	1
75-100	0	4	4	0	7	7	0	3	3
50-75	0	47	47	0	58	58	0	11	11
20-50	3	418	421	3	461	464	0	43	43
10-20	21	1117	1138	26	1215	1241	5	98	103
5-10	79	1067	1146	92	1088	1180	13	21	34
1-5	297	3211	3508	300	3223	3523	3	12	15
1 or less	1115	6304	7419	1108	6360	7468	-7	56	49
Total	1515	12168	13683	1529	12413	13942	14	245	259
Maximum (mSv)	37.35	99.30	99.30	37.49	105.11	105.11	-	-	-
Average (mSv)	1.22	3.95	3.65	1.31	4.18	3.87	-	-	-

• 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.

Table 8. Equivalent Dose to the Lens of the Eyes

Dose Ranges (mSv)	April 2017 - February 2018			April 2017 - March 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	6	6	0	3	3
50-75	0	35	35	0	41	41	0	6	6
20-50	0	238	238	0	263	263	0	25	25
10-20	15	1108	1123	22	1234	1256	7	126	133
5-10	77	1099	1176	86	1131	1217	9	32	41
1-5	301	3271	3572	306	3276	3582	5	5	10
1 or less	1122	6414	7536	1115	6462	7577	-7	48	41
Total	1515	12168	13683	1529	12413	13942	14	245	259
Maximum (mSv)	18.50	86.10	86.10	19.51	86.10	86.10	-	-	-
Average (mSv)	1.10	3.50	3.23	1.19	3.74	3.46	-	-	-

• 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.