

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)	December 2017			January 2018			February 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	1	1	0	0	0
5-10	0	18	18	0	23	23	0	46	46
1-5	22	578	600	24	614	638	36	785	821
1 or less	976	6683	7659	922	6444	7366	911	6349	7260
Total	998	7280	8278	946	7082	8028	947	7180	8127
Maximum (mSv)	2.60	10.31	10.31	4.14	10.60	10.60	3.73	9.72	9.72
Average (mSv)	0.14	0.32	0.30	0.13	0.35	0.32	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 January 31, 2018 and from April 1, 2016 to February 28, 2018, and Table 3: from April 1, 2017 to January 31, 2018 and from April 1, 2017 to February 28, 2018 for comparison.

Table 2. Cumulative Exposure Dose for Five Years

Dose Ranges (mSv)	April 2016 - January 2018			April 2016 - February 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	16	16	0	3	3
20-50	4	823	827	7	876	883	3	53	56
10-20	86	1581	1667	88	1657	1745	2	76	78
5-10	124	1869	1993	127	1894	2021	3	25	28
1-5	477	4508	4985	492	4497	4989	15	-11	4
1 or less	1211	7840	9051	1195	7867	9062	-16	27	11
Total	1902	16634	18536	1909	16807	18716	7	173	180
Maximum (mSv)	23.35	61.95	61.95	23.65	63.55	63.55	-	-	-
Average (mSv)	1.85	4.40	4.14	1.93	4.53	4.26	-	-	-

• 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.

• 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 - January 2018			April 2017 - February 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	65	65	0	68	68	0	3	3
10-20	5	828	833	12	984	996	7	156	163
5-10	59	965	1024	69	1007	1076	10	42	52
1-5	286	3280	3566	289	3380	3669	3	100	103
1 or less	1157	6803	7960	1148	6730	7878	-9	-73	-82
Total	1507	11941	13448	1518	12169	13687	11	228	239
Maximum (mSv)	13.80	29.57	29.57	15.24	29.57	29.57	-	-	-
Average (mSv)	0.92	2.46	2.29	1.02	2.66	2.48	-	-	-

• 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)	December 2017			January 2018			February 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	0	0	0	0	0
10-20	0	8	8	1	15	16	0	4	4
5-10	0	76	76	0	82	82	0	84	84
1-5	32	814	846	30	821	851	40	922	962
1 or less	966	6382	7348	915	6164	7079	907	6170	7077
Total	998	7280	8278	946	7082	8028	947	7180	8127
Maximum (mSv)	4.60	12.90	12.90	11.20	17.00	17.00	3.93	11.86	11.86
Average (mSv)	0.16	0.48	0.44	0.16	0.51	0.47	0.18	0.50	0.46

• 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.

• 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)	December 2017			January 2018			February 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	3	3	0	4	4
5-10	0	64	64	1	43	44	0	84	84
1-5	29	732	761	27	775	802	40	922	962
1 or less	969	6481	7450	918	6261	7179	907	6170	7077
Total	998	7280	8278	946	7082	8028	947	7180	8127
Maximum (mSv)	2.60	12.70	12.70	6.80	12.40	12.40	3.93	11.86	11.86
Average (mSv)	0.14	0.43	0.39	0.15	0.43	0.39	0.18	0.50	0.46

• 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.

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

Table 7. Equivalent Dose to the Skin

Dose Ranges (mSv)	April 2017 - January 2018			April 2017 - February 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	38	38	0	46	46	0	8	8
20-50	1	358	359	1	397	398	0	39	39
10-20	13	991	1004	19	1102	1121	6	111	117
5-10	66	1070	1136	77	1081	1158	11	11	22
1-5	277	3014	3291	284	3102	3386	7	88	95
1 or less	1150	6466	7616	1137	6437	7574	-13	-29	-42
Total	1507	11941	13448	1518	12169	13687	11	228	239
Maximum (mSv)	35.75	95.60	95.60	36.45	99.30	99.30	-	-	-
Average (mSv)	1.06	3.65	3.36	1.16	3.87	3.57	-	-	-

• 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.

Table 8. Equivalent Dose to the Lens of the Eyes

Dose Ranges (mSv)	April 2017 - January 2018			April 2017 - February 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	33	33	0	35	35	0	2	2
20-50	0	219	219	0	237	237	0	18	18
10-20	9	945	954	14	1104	1118	5	159	164
5-10	59	1089	1148	74	1105	1179	15	16	31
1-5	284	3074	3358	288	3151	3439	4	77	81
1 or less	1155	6578	7733	1142	6534	7676	-13	-44	-57
Total	1507	11941	13448	1518	12169	13687	11	228	239
Maximum (mSv)	17.29	86.10	86.10	18.54	86.10	86.10	-	-	-
Average (mSv)	0.96	3.24	2.99	1.06	3.48	3.21	-	-	-

• 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.