Attachment

# Exposure Dose Distribution

**1. External Exposure Dose of Workers at the Fukushima Daiichi Nuclear Power Station (Effective Dose)**

Table 1 shows what levels of external radiation exposure the workers who were involved in radiation work at the Fukushima Daiichi Nuclear Power Station from March 2016 to May 2016 received.

**Table 1. External exposure dose**

| Dose Ranges (mSv) | March 2016 | | | April 2016 | | | May 2016 | | |
|---|---|---|---|---|---|---|---|---|---|
| | TEPCO's Employees | Contractors | Total | TEPCO's Employees | Contractors | Total | TEPCO's 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 | 19 | 19 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5-10 | 0 | 93 | 93 | 0 | 42 | 42 | 0 | 16 | 16 |
| 1-5 | 44 | 1291 | 1335 | 16 | 870 | 886 | 8 | 628 | 636 |
| 1 or less | 1125 | 8051 | 9176 | 1097 | 7853 | 8950 | 1002 | 7613 | 8615 |
| Total | 1169 | 9454 | 10623 | 1113 | 8765 | 9878 | 1010 | 8257 | 9267 |
| Maximum (mSv) | 2.71 | 13.82 | 13.82 | 1.90 | 9.78 | 9.78 | 2.42 | 9.40 | 9.40 |
| Average (mSv) | 0.20 | 0.59 | 0.55 | 0.16 | 0.41 | 0.38 | 0.12 | 0.30 | 0.28 |

・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. External and Internal Exposure Doses of Radiation Workers at the Fukushima Daiichi Nuclear Power Station (Effective Dose)**

Table 2 shows what levels of both external and internal radiation exposure the workers who were involved in radiation work at the Fukushima Daiichi Nuclear Power Station received during the two different periods of time, five years from April 1, 2016 to April 30, and from April 1, 2016 to May 31, 2016 and table 3 shows data on the radiation exposure dose of the workers who were engaged in radiation work at the power station during the two different periods of time, the fiscal year 2016 from April 1 to April 30, and from April 1 to May 31, 2016.

**Table 2. Cumulative exposure dose for five years from April 1, 2016**

| Dose Ranges (mSv) | April 2016 | | | April 2016 - May 2016 | | | Difference | | |
|---|---|---|---|---|---|---|---|---|---|
| | TEPCO's Employees | Contractors | Total | TEPCO's Employees | Contractors | Total | TEPCO's 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 | 17 | 17 | 0 | 17 | 17 |
| 5-10 | 0 | 42 | 42 | 0 | 122 | 122 | 0 | 80 | 80 |
| 1-5 | 16 | 870 | 886 | 59 | 1422 | 1481 | 43 | 552 | 595 |
| 1 or less | 1097 | 7853 | 8950 | 1135 | 7904 | 9039 | 38 | 51 | 89 |
| Total | 1113 | 8765 | 9878 | 1194 | 9465 | 10659 | 81 | 700 | 781 |
| Maximum (mSv) | 1.90 | 9.78 | 9.78 | 3.05 | 18.96 | 18.96 | - | - | - |
| Average (mSv) | 0.16 | 0.41 | 0.38 | 0.25 | 0.64 | 0.60 | - | - | - |

・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 radiation exposure dose has been reported since October 2011.

**Table 3. Cumulative exposure dose for FY2016**

| Dose Ranges (mSv) | April 2016 | | | April 2016 - May 2016 | | | Difference | | |
|---|---|---|---|---|---|---|---|---|---|
| | TEPCO's Employees | Contractors | Total | TEPCO's Employees | Contractors | Total | TEPCO's 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 | 17 | 17 | 0 | 17 | 17 |
| 5-10 | 0 | 42 | 42 | 0 | 122 | 122 | 0 | 80 | 80 |
| 1-5 | 16 | 870 | 886 | 59 | 1422 | 1481 | 43 | 552 | 595 |
| 1 or less | 1097 | 7853 | 8950 | 1135 | 7904 | 9039 | 38 | 51 | 89 |
| Total | 1113 | 8765 | 9878 | 1194 | 9465 | 10659 | 81 | 700 | 781 |
| Maximum (mSv) | 1.90 | 9.78 | 9.78 | 3.05 | 18.96 | 18.96 | - | - | - |
| Average (mSv) | 0.16 | 0.41 | 0.38 | 0.25 | 0.64 | 0.60 | - | - | - |

・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. External and Internal Exposure Doses of "Workers Exposed to Especially High Radiation" (Effective Dose)**

Table 4 shows what levels of both external and internal radiation exposure "workers exposed to especially high radiation"*[1] received.*[2]

**Table 4. Cumulative exposure dose for "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 has opted not to report to the Labour Standards Inspection Office on "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" is the number of the workers who have been reported to work as "workers exposed to especially high radiation" at least once during the period from March 2011 to September 2015.

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 doses to the skin and the lens of the eye of the workers, respectively, who were involved in radiation work at the Fukushima Daiichi Nuclear Power Station from March 2016 to May 2016.

**Table 5. Equivalent dose to the skin**

| Dose Ranges (mSv) | March 2016 | | | April 2016 | | | May 2016 | | |
|---|---|---|---|---|---|---|---|---|---|
| | TEPCO's Employees | Contractors | Total | TEPCO's Employees | Contractors | Total | TEPCO's 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 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50-75 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20-50 | 0 | 36 | 36 | 0 | 13 | 13 | 0 | 0 | 0 |
| 10-20 | 0 | 83 | 83 | 0 | 47 | 47 | 0 | 1 | 1 |
| 5-10 | 0 | 312 | 312 | 0 | 186 | 186 | 0 | 40 | 40 |
| 1-5 | 56 | 1524 | 1580 | 24 | 1167 | 1191 | 8 | 806 | 814 |
| 1 or less | 1113 | 7496 | 8609 | 1089 | 7352 | 8441 | 1002 | 7410 | 8412 |
| Total | 1169 | 9454 | 10623 | 1113 | 8765 | 9878 | 1010 | 8257 | 9267 |
| Maximum (mSv) | 4.80 | 80.10 | 80.10 | 2.70 | 32.70 | 32.70 | 2.42 | 11.86 | 11.86 |
| Average (mSv) | 0.22 | 1.07 | 0.97 | 0.17 | 0.73 | 0.67 | 0.12 | 0.37 | 0.34 |

・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 eye**

| Dose Ranges (mSv) | March 2016 | | | April 2016 | | | May 2016 | | |
|---|---|---|---|---|---|---|---|---|---|
| | TEPCO's Employees | Contractors | Total | TEPCO's Employees | Contractors | Total | TEPCO's 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 | 2 | 2 | 0 | 1 | 1 | 0 | 0 | 0 |
| 10-20 | 0 | 40 | 40 | 0 | 19 | 19 | 0 | 1 | 1 |
| 5-10 | 0 | 196 | 196 | 0 | 121 | 121 | 0 | 40 | 40 |
| 1-5 | 50 | 1446 | 1496 | 19 | 1017 | 1036 | 8 | 806 | 814 |
| 1 or less | 1119 | 7770 | 8889 | 1094 | 7607 | 8701 | 1002 | 7410 | 8412 |
| Total | 1169 | 9454 | 10623 | 1113 | 8765 | 9878 | 1010 | 8257 | 9267 |
| Maximum (mSv) | 2.71 | 23.40 | 23.40 | 2.00 | 20.50 | 20.50 | 2.42 | 11.86 | 11.86 |
| Average (mSv) | 0.20 | 0.74 | 0.68 | 0.17 | 0.55 | 0.51 | 0.12 | 0.37 | 0.34 |

・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 eye 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 face masks have does not affect the measurement results.

**5. Cumulative Data of Equivalent Dose**

Table 7 and Table 8 show the cumulative data (during the two different periods of time, from April 1, 2016 and April 30, 2016 and from April 1, 2016 to May 31, 2016) of equivalent doses to the skin and the lens of the eyes of the workers, respectively, who were engaged in radiation work at the Fukushima Daiichi Nuclear Power Station.

**Table 7**. **Equivalent dose to the skin**

| Dose Ranges (mSv) | April 2016 | | | April 2016 - May 2016 | | | Difference | | |
|---|---|---|---|---|---|---|---|---|---|
| | TEPCO's Employees | Contractors | Total | TEPCO's Employees | Contractors | Total | TEPCO's 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 | 13 | 13 | 0 | 16 | 16 | 0 | 3 | 3 |
| 10-20 | 0 | 47 | 47 | 0 | 114 | 114 | 0 | 67 | 67 |
| 5-10 | 0 | 186 | 186 | 0 | 276 | 276 | 0 | 90 | 90 |
| 1-5 | 24 | 1167 | 1191 | 64 | 1665 | 1729 | 40 | 498 | 538 |
| 1 or less | 1089 | 7352 | 8441 | 1130 | 7394 | 8524 | 41 | 42 | 83 |
| Total | 1113 | 8765 | 9878 | 1194 | 9465 | 10659 | 81 | 700 | 781 |
| Maximum (mSv) | 2.70 | 32.70 | 32.70 | 3.69 | 41.88 | 41.88 | - | - | - |
| Average (mSv) | 0.17 | 0.73 | 0.67 | 0.27 | 1.00 | 0.92 | - | - | - |

・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 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 eye)**

| Dose Ranges (mSv) | April 2016 | | | April 2016 - May 2016 | | | Difference | | |
|---|---|---|---|---|---|---|---|---|---|
| | TEPCO's Employees | Contractors | Total | TEPCO's Employees | Contractors | Total | TEPCO's 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 | 4 | 4 | 0 | 3 | 3 |
| 10-20 | 0 | 19 | 19 | 0 | 69 | 69 | 0 | 50 | 50 |
| 5-10 | 0 | 121 | 121 | 0 | 223 | 223 | 0 | 102 | 102 |
| 1-5 | 19 | 1017 | 1036 | 60 | 1587 | 1647 | 41 | 570 | 611 |
| 1 or less | 1094 | 7607 | 8701 | 1134 | 7582 | 8716 | 40 | -25 | 15 |
| Total | 1113 | 8765 | 9878 | 1194 | 9465 | 10659 | 81 | 700 | 781 |
| Maximum (mSv) | 2.00 | 20.50 | 20.50 | 3.25 | 28.50 | 28.50 | - | - | - |
| Average (mSv) | 0.17 | 0.55 | 0.51 | 0.26 | 0.83 | 0.77 | - | - | - |

・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.