Dose Statistical Data Based on the Information Registered with the System of Registration and Management of Radiation Exposure Doses for Workers at Nuclear Power Plants and Nuclear Facilities (Fiscal 2016)

Radiation Dose Registration Center

#### 1. Release of statistical data

The Radiation Dose Registration Center (RADREC) of the Radiation Effects Association assigns an individualized registration number in RADREC to each worker engaged in radiation work at nuclear licensees' facilities, such as nuclear power plants and nuclear fuel fabrication facilities, that are part of the System of Registration and Management of Radiation Exposure Doses for Nuclear Facilities (Nuclear Registration and Management System); RADREC thus performs systematic regulatory control of workers' radiation exposure doses. Thus, even if a given worker moves to another nuclear power plant or facility (collectively referred to as "nuclear sites" below) to engage in other radiation work, the Nuclear Registration and Management System allows RADREC to track each worker's dose accurately, because the nuclear licensees who join the system register their workers' doses at all work sites.

Using this registration information, RADREC has released statistical data that represent the radiation-managing status for workers engaged in radiation work at nuclear sites.

Since the collective dose at the TEPCO Fukushima Daiichi Nuclear Power Plant (hereafter F1) was larger than at other nuclear sites, statistical data excluding F1 were also compiled to clarify the radiation amounts present at other nuclear sites.

In addition to statistics from normal operation, the dose data of emergency work connected to the F1 accident caused by the East Japan Earthquake and subsequent tsunami on 11 March 2011 have also been released. In these statistics, the emergency dose data of emergency work in the 2010–2015 period were finally summarized, because dose data were not registered in 2016 due to the progress of the F1 situation.

## 2. List of nuclear licensees that are part of the Nuclear Registration and Management System

The statistical data were based on the dose data registered in RADREC by the following nuclear licensees. The names of the nuclear sites are shown in parentheses.

- 1 Japan Atomic Energy Agency (Nuclear Science Research Institute, Nuclear Fuel Cycle Engineering Labs, Oarai, Naka,\* Kansai,\* Takasaki,\* Tono, Ningyo-toge Fugen, Monju, Mutsu)
- 2 Japan Nuclear Fuel Ltd. (Enrichment and Disposal Plants, Reprocessing Plant)
- (3) Hokkaido Electric Power Co., Inc. (Tomari)
- 4 Tohoku Electric Power Co., Inc. (Onagawa, Higashidori)

- ⑤ Tokyo Electric Power Co. Holdings, Inc. (Fukushima No. 1, Fukushima No. 2, Kashiwazaki-Kariwa)
- 6 Chubu Electric Power Co., Inc. (Hamaoka)
- (7) Hokuriku Electric Power Co. (Shika)
- 8 The Kansai Electric Power Co., Inc. (Mihama, Takahama, Ooi)
- (9) The Chugoku Electric Power Co., Inc. (Shimane)
- 1 Shikoku Electric Power Co., Inc. (Ikata)
- (1) Kyushu Electric Power Co., Inc. (Genkai Sendai)
- 1 The Japan Atomic Power Company (Tokai, Tokai No. 2, Tsuruga)
- (13) Nuclear Fuel Industries, Ltd. (Kumatori, Tokai)
- (14) Sumitomo Metal Mining Co., Ltd. (Tokai)
- (f) Global Nuclear Fuel Japan Co., Ltd. (Yokosuka)
- (17) Mitsubishi Nuclear Fuel (Tokai)
- 18 JCO Co., Ltd. (Tokai)
  - \* The operation of Naka, Kansai, and Takasaki was transferred from JAEA to other organizations on 1 April 2016.

# 3. Data compilation method

The statistical data are based on doses of workers engaged in radiation work of the nuclear licensees that have joined the Nuclear Registration and Management System compiled by RADREC.

- (1) These statistical data are based on registered data provided by the nuclear licensees as of 1 June 2016.
- (2) The doses compiled are the effective doses, i.e. the total of both external exposure and internal exposure doses.
- (3) The doses of workers engaged in emergency work at F1 were registered by Tokyo Electric Power Co. Holdings, Inc., and involve doses of all work carried out from 11 March 2011 to 30 November 2011 and the special work continuing after 30 November 2011. The special work was undertaken to maintain the function of cooling reactors or to maintain the ability to control or prevent the release of radioactive materials.
- (4) "Maximum dose," "collective dose," "mean dose," and "%" were rounded to one decimal place. Some percentage values may not add up 100% due to rounding.
- (5) The workers' ages are reported as of 31 March 2016.
- (6) The "Total number" of radiation workers was compiled based on distinct individuals, so that workers who worked at more than one nuclear site were only counted once.

# **[Exposure Dose Limits for workers]**

## 1. Dose limits for normal work

The exposure dose limit for workers is set at 100 millisieverts (mSv) over five years and 50 mSv in one year, while the dose limit for female workers (excluding those who indicate no possibility of pregnancy and those who are pregnant) is strictly set at 5 mSv over three months beyond the dose limit conditions above. "Five years" refers to the statutory period that started on 1 April 2001 and has been renewed every subsequent five years.

# 2. Dose limits for emergency work related to the F1 accident

Regardless of the dose limits noted above for normal radiation work, the dose limit for emergency workers is set at 100 mSv during a period of emergency work in the Ordinance on Prevention of Ionizing Radiation Hazards. In the case of the F1 accident, the following special measures applied:

#### (1) 14 March 2011

Dose limit changed from 100 mSv to 250 mSv (applied from the day of the Declaration of a Nuclear Emergency Situation (11 March 2011))

### (2) From 1 November 2011

Dose limit restricted only to work designated by the Minister of Health, Labour and Welfare.

## (3) From 16 December 2011

Dose limits for normal work have been applied in principle (100 mSv over five years and 50 mSv in one year). However, 100 mSv was set as the upper limit for the special radiation work.\*1 For workers who possess specialized knowledge and experience, the dose limit was set at 250 mSv until 30 April 2012 as a transitional measure.\*2

- \*1 Work to maintain the function of cooling reactors or to maintain the ability to control or prevent the release of radioactive materials.
- \*2 Workers who were exposed to more than 100 mSv in emergency work through 12 December 2011. As they possess highly specialized knowledge and experience in special work, such as maintaining the cooling function of reactors, workers to take their place could not be easily found.

## [Definition of terminology]

- (1) Radiation Worker: A person designated by nuclear licensees as a radiation worker based on the Law for the Regulation of Nuclear Source Material, Nuclear Fuel Material, and Reactors whose core occupation is in radiation control areas, excluding people who enter radiation control areas occasionally.
- (2) Exposure doses: Exposure doses of workers engaged in nuclear facilities recorded in RADREC accumulated in one fiscal year (1 April to 31 March).
- (3) Five-year exposure doses: Exposure doses accumulated in the statutory five-year period to ensure long-term dose limits are observed. The first period started on 1 April 2001, with exposure doses accumulating every subsequent five years. The fiscal year periods are as follows: 2001–2005, 2006–2011, 2012–2017, 2018–2022, etc.

- (4) Number of engaged sites in a year: The number of nuclear sites where workers were engaged in radiation work during the period (fiscal year) when the statistical data were compiled. The total number of engaged sites in Fiscal 2015 was 34(\*). Even if a worker was engaged in radiation work at one nuclear site several times in one year, that counted as only one engaged site (\*the operation of Naka, Kansai, and Takasaki was transferred from JAEA to other organizations on 1 April 2016).
- (5) Number of engaged sites in five years: The number of nuclear sites where workers were engaged in radiation work during the period of statistical data compilation (fiscal years 2011 to 2015). The number of engaged sites from fiscal 2011 through fiscal 2015 was 37.

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- 1. Dose Distribution of Workers by Age [Fiscal 2016] (Table)
- 2. Dose Distribution of Workers by Age {Fiscal 2016}(Figure)
- 3. Dose Distribution of Workers by Age {Fiscal 2016} (Excluding the Data for F1) (Figure)
- 4. Dose Distribution of Workers by Age {Fiscal 2016} (Excluding the data for F1) (Table)
- 5. Dose Distribution of Workers by Gender {Fiscal 2016} (Table)
- 6. Annual Trends of Numbers of Workers by Age [Fiscal 2012-2016] (Figure)
- 7. Annual Trends of Numbers of Workers by Dose Range [Fiscal 2012–2016] (Figure)
- 8. Dose Distribution of Workers by Number of Engaged Sites {Fiscal 2016} (Table)
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# 1. Dose Distribution of Workers by Age {Fiscal 2016}

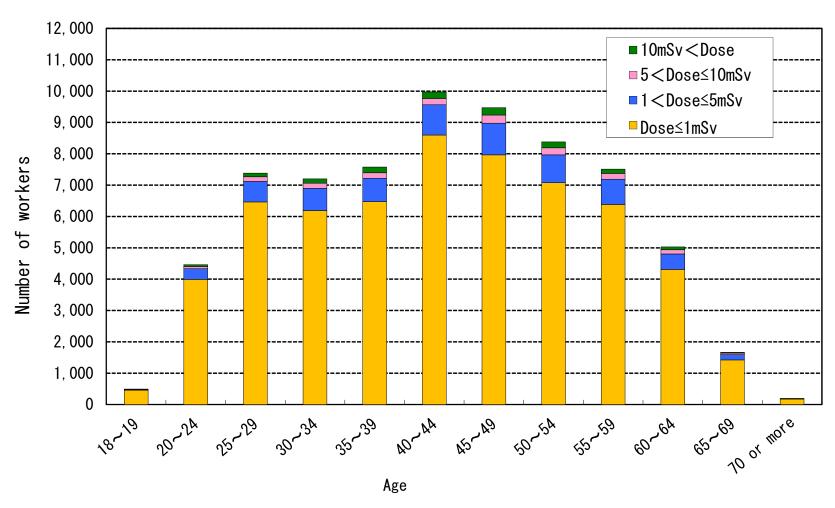
Dose						Number	of worke	rs					Total no. of	Dose		
(mSv)	Dose≤1	1 <dose< td=""><td>2.5<dose< td=""><td>5<dose< td=""><td>7.5<dose< td=""><td>10<dose< td=""><td>15<dose< td=""><td>20<dose< td=""><td>25<dose< td=""><td>30<dose< td=""><td>40<dose< td=""><td>50&lt;</td><td>wokers</td><td>Collective dose</td><td>Mean</td><td>Max</td></dose<></td></dose<></td></dose<></td></dose<></td></dose<></td></dose<></td></dose<></td></dose<></td></dose<></td></dose<>	2.5 <dose< td=""><td>5<dose< td=""><td>7.5<dose< td=""><td>10<dose< td=""><td>15<dose< td=""><td>20<dose< td=""><td>25<dose< td=""><td>30<dose< td=""><td>40<dose< td=""><td>50&lt;</td><td>wokers</td><td>Collective dose</td><td>Mean</td><td>Max</td></dose<></td></dose<></td></dose<></td></dose<></td></dose<></td></dose<></td></dose<></td></dose<></td></dose<>	5 <dose< td=""><td>7.5<dose< td=""><td>10<dose< td=""><td>15<dose< td=""><td>20<dose< td=""><td>25<dose< td=""><td>30<dose< td=""><td>40<dose< td=""><td>50&lt;</td><td>wokers</td><td>Collective dose</td><td>Mean</td><td>Max</td></dose<></td></dose<></td></dose<></td></dose<></td></dose<></td></dose<></td></dose<></td></dose<>	7.5 <dose< td=""><td>10<dose< td=""><td>15<dose< td=""><td>20<dose< td=""><td>25<dose< td=""><td>30<dose< td=""><td>40<dose< td=""><td>50&lt;</td><td>wokers</td><td>Collective dose</td><td>Mean</td><td>Max</td></dose<></td></dose<></td></dose<></td></dose<></td></dose<></td></dose<></td></dose<>	10 <dose< td=""><td>15<dose< td=""><td>20<dose< td=""><td>25<dose< td=""><td>30<dose< td=""><td>40<dose< td=""><td>50&lt;</td><td>wokers</td><td>Collective dose</td><td>Mean</td><td>Max</td></dose<></td></dose<></td></dose<></td></dose<></td></dose<></td></dose<>	15 <dose< td=""><td>20<dose< td=""><td>25<dose< td=""><td>30<dose< td=""><td>40<dose< td=""><td>50&lt;</td><td>wokers</td><td>Collective dose</td><td>Mean</td><td>Max</td></dose<></td></dose<></td></dose<></td></dose<></td></dose<>	20 <dose< td=""><td>25<dose< td=""><td>30<dose< td=""><td>40<dose< td=""><td>50&lt;</td><td>wokers</td><td>Collective dose</td><td>Mean</td><td>Max</td></dose<></td></dose<></td></dose<></td></dose<>	25 <dose< td=""><td>30<dose< td=""><td>40<dose< td=""><td>50&lt;</td><td>wokers</td><td>Collective dose</td><td>Mean</td><td>Max</td></dose<></td></dose<></td></dose<>	30 <dose< td=""><td>40<dose< td=""><td>50&lt;</td><td>wokers</td><td>Collective dose</td><td>Mean</td><td>Max</td></dose<></td></dose<>	40 <dose< td=""><td>50&lt;</td><td>wokers</td><td>Collective dose</td><td>Mean</td><td>Max</td></dose<>	50<	wokers	Collective dose	Mean	Max
Age		≤2.5	≤5	≤7.5	≤10	≤15	≤20	≤25	≤30	≤40	≤50	Dose	(%)	(person · mSv)	(mSv)	(mSv)
18~19	454	13	12	3	3	1	0	1	0	0	0	0	487 (0.7)	173. 0	0. 4	20. 5
20~24	3, 990	217	127	45	19	38	15	4	2	2	0	0	4, 459 (6. 4)	2, 548. 1	0. 6	37. 6
25~29	6, 461	443	211	89	63	66	34	9	4	3	0	0	7, 383 (10. 7)	4, 875. 0	0. 7	35. 9
30~34	6, 188	467	242	107	55	87	35	9	5	2	0	0	7, 197 (10. 4)	5, 365. 4	0. 7	38. 3
35~39	6, 475	460	287	107	66	101	51	16	7	8	0	0	7, 578 (10. 9)	6, 482. 1	0. 9	36. 8
40~44	8, 598	626	339	129	70	121	53	16	11	9	0	0	9, 972 (14. 4)	7, 693. 3	0.8	36. 2
45~49	7, 963	646	368	157	101	133	65	20	10	8	0	0	9, 471 (13. 7)	8, 698. 7	0. 9	37. 8
50~54	7, 079	572	316	146	79	106	53	15	10	5	0	0	8, 381 (12. 1)	7, 197. 7	0. 9	38. 2
55~59	6, 384	519	284	128	60	81	38	8	2	5	0	0	7, 509 (10. 8)	5, 700. 4	0.8	37. 9
60~64	4, 306	322	176	85	45	56	17	10	6	4	0	0	5, 027 (7. 3)	3, 955. 7	0.8	38. 8
65~69	1, 424	105	61	31	18	16	8	4	0	1	0	0	1, 668 (2. 4)	1, 297. 8	0.8	35. 9
70 or more	173	5	3	2	1	0	2	0	0	0	0	0	186 (0.3)	88. 2	0. 5	19. 5
Total no. of wokers	59, 495	,	2, 426		580		371	112			0	0	69, 318 (100. 0)	_	_	
(%)	(85. 8)	(6. 3)	(3. 5)	(1.5)	(0.8)	(1. 2)	(0.5)	(0. 2)	(0. 1)	(0. 1)	(0.0)	(0.0)				
Collective Dose (person • mSv)	4, 958. 5	7, 175. 2	8, 677. 2	6, 315. 1	5, 013. 2	9, 923. 1	6, 375. 3	2, 467. 9	1, 545. 2	1, 624. 7	0. 0	0.0	_	54, 075. 3	0. 8	38. 8

<sup>•</sup> How to read the table entries: The number "443" in the box for the age row of "25~29" and the dose column of "1<Dose≤2.5" means that there were 443 workers between age 25 and 29 inclusive whose radiation doses were in the range of greater than 1 and less than or equal to 2.5 millisieverts in Fiscal 2016.

<sup>•</sup> The workers' ages are based on the Western style of calculating age as 31 March 2017.

<sup>•</sup> Dose data of the emergency workers at Fukushima Daiichi Nuclear Plant are not included.

# 2. Dose Distribution of Workers by Age {Fiscal 2016}



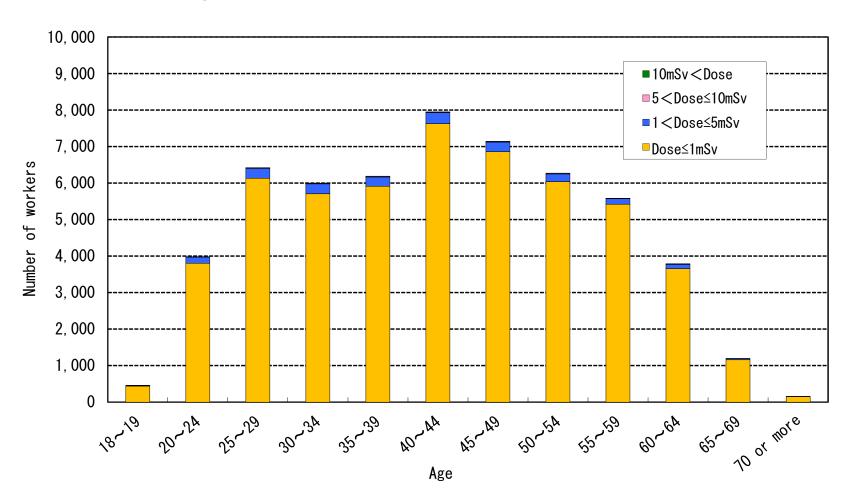
- \* This figure is based on the data in the Table 1 "Dose Distributin of Workers by Age {Fiscal 2016}.
- \* Dose data of the emergency workers at Fukushima Daiichi Nuclear Power Plant are not included.

3. Dose Distribution of Workers by Age {Fiscal 2016} (Excluding the Data for Fukushim Daiichi Nuclear Power Planet)

Dose					Numbe	r of wo	rkers						Total no	of wokoro		Dose	
(mSv)	Dose≤1	1 <dose ≤2.5</dose 	2.5 <dose ≤5</dose 	5 <dose ≤7.5</dose 	7.5 <dose ≤10</dose 	10 <dose ≤15</dose 	15 <dose ≤20</dose 	20 <dose ≤25</dose 	25 <dose ≤30</dose 	30 <dose ≤40</dose 			Total no.	(%)	Collective Dose (person·mSv)	Mean (mSv)	Max (mSv)
18~19	439	11	3			0	0		0	0	0	0	454	(0.8)	61. 9	0. 1	7. 8
20~24	3, 804	116	54	6	0	0	0	0	0	0	0	0	3, 980	(7. 2)	697. 6	0. 2	7. 5
25~29	6, 131	210	59	12	3	2	0	0	0	0	0	0	6, 417	(11. 6)	1, 040. 7	0. 2	11. 5
30~34	5, 706	201	69	9	4	1	0	0	0	0	0	0	5, 990	(10. 9)	1, 030. 9	0. 2	11. 8
35~39	5, 910	177	79	14	3	1	0	0	0	0	0	0	6, 184	(11. 2)	1, 044. 9	0. 2	11. 6
40~44	7, 628	227	74	10	3	1	1	0	0	0	0	0	7, 944	(14. 4)	1, 165. 4	0. 1	15. 5
45~49	6, 861	200	61	15	1	1	0	0	0	0	0	0	7, 139	(13. 0)	999. 9	0. 1	11. 2
50~54	6, 041	161	46	19	2	1	0	0	0	0	0	0	6, 270	(11. 4)	843. 3	0. 1	11. 4
55 <b>~</b> 59	5, 421	109	45	5	1	2	0	0	0	0	0	0	5, 583	(10. 1)	617. 3	0. 1	11. 3
60~64	3, 654	100	20	6	5	1	0	0	0	0	0	0	3, 786	(6. 9)	507. 2	0. 1	10.8
65~69	1, 159	24	6	3	1	0	0	0	0	0	0	0	1, 193	(2. 2)	145. 8	0. 1	7. 8
70 or more	148	2	0	1	0	0	0	0	0	0	0	0	151	(0.3)	15. 4	0. 1	5. 5
Total no. of wokers (%)	52, 902 (96. 0)	1, 538 (2. 8)	516 (0. 9)	100 (0. 2)	(0. 0)	10 (0. 0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	55, 091	(100. 0)	_	_	_
Collective Dose (person·mSv)	3, 014. 6	2, 447. 1	1, 777. 5	602. 2	200. 9	112. 6	15. 5	0. 0	0. 0	0.0	0.0	0.0	_	_	8, 170. 4	0. 1	15. 5

- This table was compiled by excluding the data for Fukushima Daiichi Nuclear Power Plant. The exposure dose data of workers at Fukushima Daiichi Nuclear Power Plant are shown in website of Tokyo Electric Power Company Holdings, Inc.
- How to rad the table entries: The number "210" in the box for the age row of "25∼29" and the dose column of "1<Dose≤2.5" means that there were 210 workers between age 25 and 29 inclusive whose radiation doses were in the range of greater than 1 and less than or equal to 2.5 millisieverts in Fiscal 2016.
- The workers' ages are based on the Western style of calculating age as 31 March 2017.
- Dose data of the emergency workers at Fukushima Daiichi Nuclear Power Plant are not included.

4. Dose Distribution of Workers by Age{Fiscal 2016} (Excluding the Data for Fukushima Daiichi Nuclear Power Plant)



- \* This figure is based on the data in the Table 3 "Dose Distribution of Workers by Age{Fiscal 2016} (Excluding the data for Fukushima Daiichi Nuclear Power Plant)."
- \* Dose data of the emergency workers at Fukushima Daiichi Nuclear Power Plant are not included.

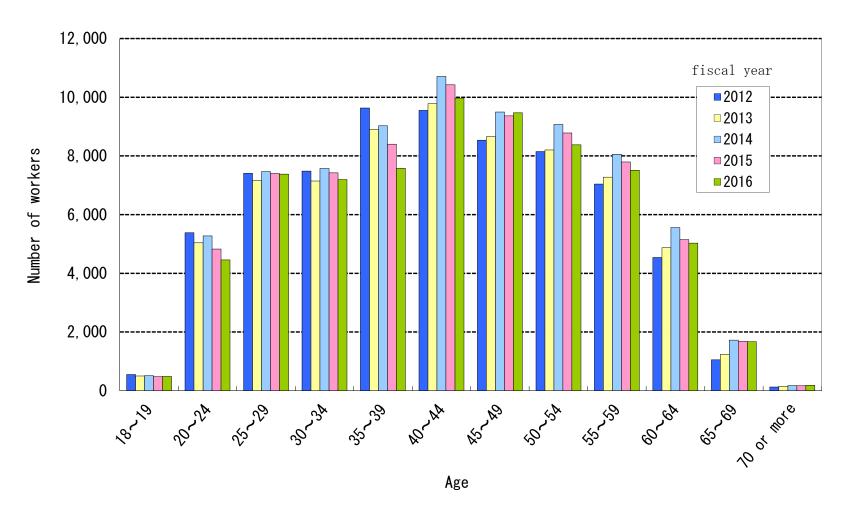
# 5. Dose Distribution of Workers by Gender (Fiscal 2016)

No. of workers	Mars	Fomel	Total no. of	Collective dose
	Man	Femal	wokers	(person·mSv)
Dose(mSv)	(%)	(%)	(%)	(%)
Dose ≤1	58, 751	744	59, 495	4, 958. 5
Dose ≥1	(85. 7)	(99. 9)	(85. 8)	(9. 2)
1< dose ≤2.5	4, 394	1	4, 395	7, 175. 2
1 < d03C ±2. 0	(6. 4)	(0. 1)	(6. 3)	(13. 3)
2.5< Dose ≤5	2, 426	0	2, 426	8, 677. 2
2.0 \ 0000 =0	(3. 5)	(0.0)	(3. 5)	(16. 0)
5< Dose ≤7.5	1, 029	0	1, 029	6, 315. 1
0 \ D000 =7.0	(1. 5)	(0.0)	(1.5)	(11. 7)
7.5< Dose ≤10	580	0	580	5, 013. 2
7.0 \ 5000 =10	(0.8)	(0.0)	(0.8)	(9. 3)
10< Dose ≤15	806	0	806	9, 923. 1
	(1. 2)	(0.0)	(1. 2)	(18. 3)
15< Dose ≤20	371	0	371	6, 375. 3
	(0.5)	(0.0)	(0.5)	(11. 8)
20< dose ≤25	112	0	112	2, 467. 9
	(0. <u>2</u> ) 57	(0.0)	(0. 2)	(4. 6)
25< Dose ≤30	(0. 1)	(0. 0)	(0. 1)	1, 545. 2 (2. 8)
	47	(0. 0)	47	1, 624. 7
30< Dose ≤40	(0. 1)	(0.0)	(0. 1)	(3.0)
	0. 17	(0. 0)	0. 17	0.0
40< Dose ≤50	(0.0)	(0.0)	(0.0)	(0.0)
	0	0	0	0.0
50< Dose	(0.0)	(0.0)	(0.0)	(0.0)
Total no. of wokers	68, 573	745	69, 318	54, 075. 4
(%)	(100. 0)	(100. 0)	(100.0)	(100.0)
Total no. of wokers	68, 573	745	, , ,	
Ratio of man and famel(%)	(98. 9)	(1. 1)		
Mean dose (mSv)	0.8	0.0	0.8	
Collective dose (person • mSv)	54, 063. 8	11. 5	54, 075. 3	
Max dose (mSv)	38. 8	1. 0	38. 8	

<sup>•</sup> How to read the table entries: The number "4,394" in the box of the dose row "1 < Dose ≤2.5 mSv" and the "man" column means that there were 4,394 man workers whose radiation doses were in the range of greater than 1 and less than or equal to 2.5 millisieverts in Fiscal 2016.

<sup>•</sup> Dose data of the emergency workers at Fukushima Daiichi Nuclear Power Plant are not included.

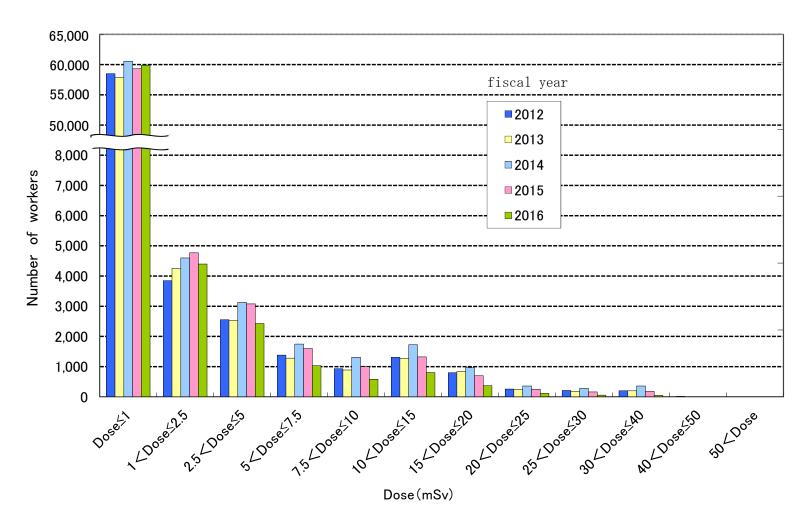
6. Annual Trends of Number of Workers by Age (Fiscal 2012-2016)



<sup>\*</sup> This figure is based on the data in the Table 5 "Dose Distribution of Workers by Gender {Fiscal 2016} and those of the latest four years {Fiscal 2012-2015}.

<sup>\*</sup> Dose data of the emergency workers at Fukushima Daiichi Nuclear Power Plant are not included.

7. Annual Trends of Number of Workers by Dose Range (Fiscal 2012-2016)



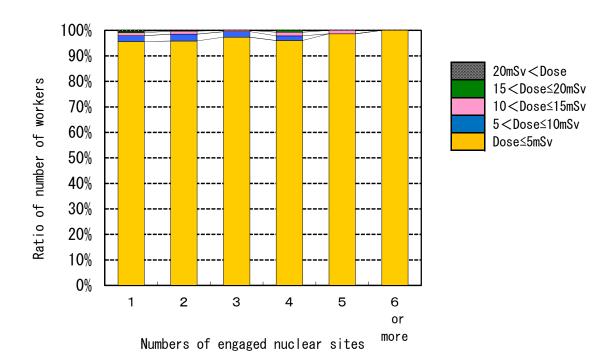
- \* This figure is based on the data in the Table 5 "Dose Distribution of Workers by Gender {Fiscal 2016} and those of the latest four years {Fiscal 2012-2015}.
- \* Dose data of the emergency workers at Fukushima Daiichi Nuclear Power Plant are not included.

# 8. Dose Distribution of Workers by Number of Engaged Sites $\{Fiscal\ 2016\}$

No. of engaged sites	1	2	3	4	5	6	Total wok	
Dose (mSv)						or more		(%)
Dose ≤ 5	58, 606	6, 292	1, 058	266	74	20	66, 316	(95. 7)
5< Dose ≤10	1, 404	177	23	5	0	0	1, 609	(2. 3)
10< Dose ≤15	718	77	6	4	1	0	806	(1. 2)
15< dose ≤20	354	15	0	2	0	0	371	(0.5)
20 <dose td="" ≤25<=""><td>109</td><td>3</td><td>0</td><td>0</td><td>0</td><td>0</td><td>112</td><td>(0. 1)</td></dose>	109	3	0	0	0	0	112	(0. 1)
25< Dose ≤30	55	2	0	0	0	0	57	(0. 1)
30< Dose ≤40	47	0	0	0	0	0	47	(0.1)
40< Dose ≤50	0	0	0	0	0	0	0	(0.0)
50< Dose	0	0	0	0	0	0	0	(0.0)
Total no. of wokers	61, 293	6, 566	1, 087	277	75	20	69,	318
(%)	(88. 4)	(9.5)	(1. 6)	(0.4)	(0. 1)	(0.0)	(100	
Mean dose (mSv)	0.8	0.8	0. 7	0. 9	0. 5	0. 1	0.	

- How to read the table entries: The number "74" in the box for the dose row of "Dose≤5" and the number of engaged sites of "5" column means that there were 74 workers who were engaged in five engaged sites and whoes radiation doses were less than 5 millisievert in Fiscal 2016.
- Dose data of the emergency workers at Fukushima Daiichi Nuclear Power Plant are not included.

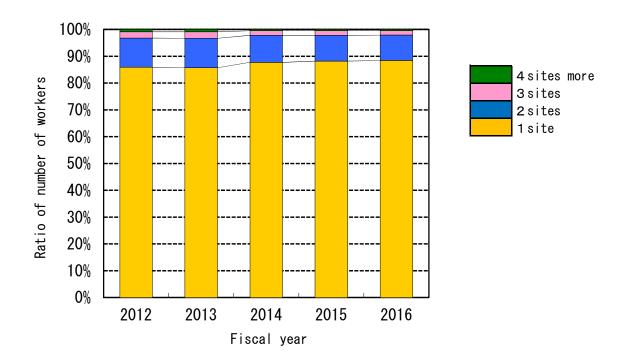
# 9. Ratio of Number of Workers by Number of Engaged Sites $\{Fiscal\ 2016\}$



<sup>\*</sup> This figure is based on the data in the Table 8 "Dose Distribution of Workers by Number of Engaged Sites{Fiscal 2016}".

<sup>\*</sup> Dose data of the emergency workers at Fukushima Daiichi Nuclear Power Plant are not included.

# 10. Annual Trends of Ratio of Workers by Number of Engaged Sites {Fiscal 2012-2016}



<sup>\*</sup> This figure is based on the data in the Table 8 "Dose Distribution of Workers by Number of Engaged Sites [Fiscal 2016] and those of the latest four years

<sup>\*</sup> Dose data of the emergency workers at Fukushima Daiichi Nuclear Power Plant are not included.

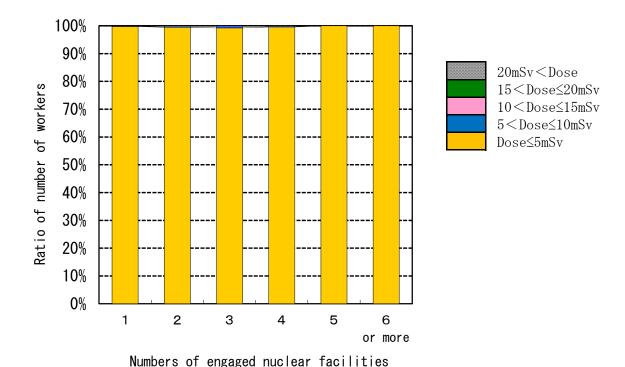
11. Dose Distribution of Workers by Number of Engaged Sites {Fiscal 2016} (Excluding the Data for Fukushima Daiichi Nuclear Power Plant)

No. of engaged sites	1	2	3	4	5	6	Total r woke	
Dose (mSv)						or more		(%)
Dose ≤ 5	48, 315	5, 375	930	254	65	17	54, 956	(99. 8)
5< Dose ≤10	91	25	7	1	0	0	124	(0. 2)
10 < Dose ≤15	9	1	0	0	0	0	10	(0.0)
15< Dose ≤20	1	0	0	0	0	0	1	(0.0)
20< Dose ≤25	0	0	0	0	0	0	0	(0.0)
25< Dose ≤30	0	0	0	0	0	0	0	(0.0)
30< Dose ≤40	0	0	0	0	0	0	0	(0.0)
40< Dose ≤50	0	0	0	0	0	0	0	(0.0)
50 < Dose	0	0	0	0	0	0	0	(0.0)
Total no. of wokers	48, 416	5, 401	937	255	65	17	55, 0	91
(%)	(87. 5)	(10. 1)	(1.8)	(0.5)	(0.1)	(0.0)	(100	. 0)
Means dose (mSv)	0.1	0.3	0. 4	0. 5	0. 3	0. 1	0. 1	

- This table was compiled by excluding the data for Fukushima Daiichi Nuclear Power Plant. The dose data of workers at Fukushima Daiichi Nuclear Power Plant are shown in HP of Tokyo Electric Power Company Holdings, lnc.
- How to read the table entries: The number "65" in the box for the dose row of "Dose≤5" and the number of engaged sites of "5" column means that there were 65 workers who were engaged in five nuclear sites and whoes radiation doses were less than 5 millisievert in Fiscal 2016.
- Dose data of the emergency workers at Fukushima Daiichi Nuclear Power Plant are not included.

# 12. Dose Distribution of Workers by Number of Engaged Sites {Fiscal 2016}

(Excluding the Data for Fukushima Daiichi Nuclear Power Plant)



<sup>\*</sup> This figure is based on the data in the Table 11 "Dose Distribution of Workers by Number of Engaged Sites {Fiscal 2016}".

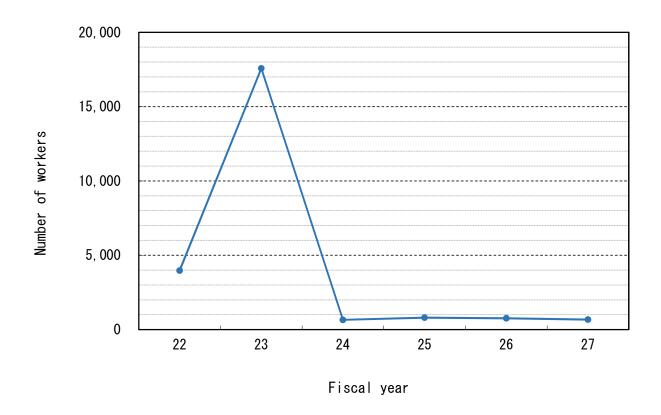
<sup>\*</sup> Dose data of the emergency workers at Fukushima Daiichi Nuclear Plant are not included.

# 13. Dose Distribution of Workers Engaged in Emergency Work {Fiscal 2010-2016}

Dose					No.	of workers	3					Total no. of		Dose	
(mSv) Fiscal Year	Dose ≤1	1< Dose ≤5	5< Dose ≤10	10< Dose ≤30		50< Dose ≤70	70< Dose ≤100	100< Dose ≤150				workers person	Collective dose (person · mSv)	Mean (mSv)	Max (mSv)
2010~2015	4, 740	4, 866	2, 803	4, 645	1, 192	459	405	137	28	3	6	19, 284	247, 403. 2	12. 8	678. 8
2010** 2010	(24. 6%)	(25. 2%)	(14. 5%)	(24. 1%)	(6. 2%)	(2. 4%)	(2. 1%)	(0.7%)	(0. 2%)	(0.0%)	(0.0%)				
2010	440	591	636	1, 492	409	156	139	82	18	2	6	3, 971	85, 759. 3	21. 6	670. 4
2011	4, 905	4, 755	2, 602	4, 368	772	140	27	1	0	0	0	17, 570	148, 247. 0	8. 4	107. 6
2012	116	222	163	129	21	1	0	0	0	0	0	652	4, 893. 7	7. 5	54. 1
2013	124	397	154	107	12	0	0	0	0	0	0	794	4, 290. 3	5. 4	41. 9
2014	156	403	134	65	0	0	0	0	0	0	0	758	2, 981. 1	3. 9	29. 5
2015	367	247	46	13	0	0	0	0	0	0	0	673	1, 231. 8	1.8	15. 1
2016	0	0	0	0	0	0	0	0	0	0	0	0	0.0	_	_

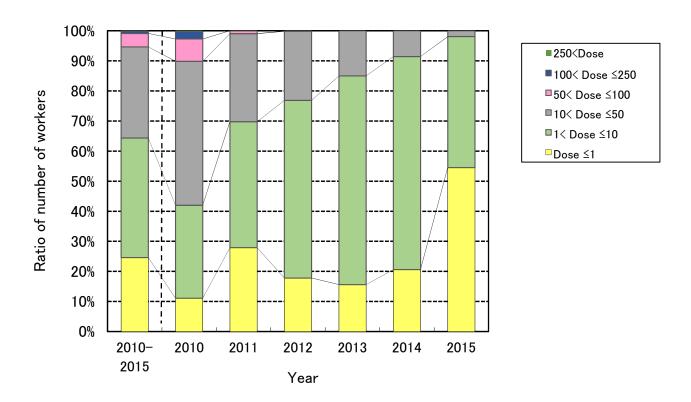
- The row "2010-2015" shows the number of workers in the dose categories who were engaged in emergency work for the duration of the 6 years from 2010 to 2015. The single year rows show the number of workers in the dose categories who were engaged in emergency work for only one year. Because the same person may be engaged in emergency work over several years, the total of the numbers of workers in each single year may be different from the number of the workers in the "2010-2015" row.
- How to read the table entries: The number "4,368" in the box for fiscal year row 2011 and the dose column "10<Dose≤30" means that there were 4,368 workers whose radiation doses were greater than 10 and less than or equal to 30 millisieverts in fiscal 2011.
- This table is based on registered data as of 13 July 2017; the re-registered data on this date were used. Therefore, it includes data changed from previously published data as statistics for emergency work.
- The data for emergency work were not registered in fiscal 2016 (Emergency work was not performed in fiscal 2016)

# 14. Trends in the Number of Workers Engaged in Emergency Work {Fiscal 2010-2015}



<sup>\*</sup> This figure is based on the data in Table 13, Dose Distribution of Workers Engaged in Emergency Work {Fiscal 2010-2016}

15 . Dose Distribution of Workers Engaged in Emergency Work by Fiscal Year {Fiscal 2010-2015}



\* This figure is based on the data in Table 13, Dose Distribution of Workers Engaged in Emergency Work {Fiscal 2010-2016}