

Radiation Dose Statistics for Nuclear Workers in FY 2024

Radiation Dose Registration Center

1. Publication of radiation dose statistics

The Radiation Dose Registration Center (RADREC) of the Radiation Effects Association assigns a unique registration number for each worker engaged in radiation works at nuclear power plants and nuclear facilities, and these radiation doses are centrally managed by the “Radiation Dose Registration System for Nuclear Workers” (hereinafter referred to as “Nuclear Registration System”). Therefore, even if the worker move from one nuclear facility to other facilities to engage in other radiation work, the Nuclear Registration System enables previous radiation doses of each worker at all work sites accurately.

Using the registered data, the RADREC publishes the statistics for fiscal year (FY, April–March) 2024 that represent the management status of radiation doses for the workers engaged in radiation work at the nuclear sites.

Since the contributions of radiation doses due to decommissioning of Fukushima–Daiichi Nuclear Power Plant operated by Tokyo Electric Power Company was significantly large, radiation management status of the other facilities under normal operation are difficult to understand. Therefore, the statistics excluding Fukushima–Daiichi Power Plant are also published.

The radiation dose statistics for emergency works due to the accident at Fukushima–Daiichi Nuclear Power Plant after the Great East Japan Earthquake which occurred on March 11, 2011 were not published since FY 2017.

2. List of nuclear licensees registered in Nuclear Registration System

The statistical data were based on the radiation doses registered in Nuclear Registration System by the following nuclear licensees. Names of the work sites are shown in parentheses.

- (1) Japan Atomic Energy Agency (Nuclear Science Research Institute, Nuclear Fuel Cycle Engineering Labs, Oarai, Tono, Ningyo–toge, Fugen, Monju, Mutsu)
- (2) Japan Nuclear Fuel Ltd. (Enrichment and Disposal Plants, Reprocessing Plant)
- (3) Recyclable–Fuel Storage Co. (Recyclable–Fuel Storage Center)
- (4) Hokkaido Electric Power Co., Inc. (Tomari)
- (5) Tohoku Electric Power Co., Inc. (Onagawa, Higashidori)
- (6) Tokyo Electric Power Co.Holdings, Inc. (Fukushima–Daiichi, Fukushima–Daini, Kashiwazaki–Kariwa)
- (7) Chubu Electric Power Co., Inc. (Hamaoka)
- (8) Hokuriku Electric Power Co. (Shika)
- (9) The Kansai Electric Power Co., Inc. (Mihama, Takahama, Ohi)

- (10) The Chugoku Electric Power Co., Inc. (Shimane)
- (11) Shikoku Electric Power Co., Inc. (Ikata)
- (12) Kyushu Electric Power Co., Inc. (Genkai Sendai)
- (13) The Japan Atomic power Company (Tokai, Tokai No2, Tsuruga)
- (14) Nuclear Fuel Industries, Ltd. (Kumatori, Tokai)
- (15) Global Nuclear Fuel Japan Co., Ltd. (Yokosuka)
- (16) Mitsubishi Nuclear Fuel Co., Ltd. (Tokai)
- (17) JCO Co., Ltd. (Tokai)

3. Data compilation method

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

- (1) These statistical data are based on registered data provided by the nuclear licensees as of June 30, 2025
- (2) The doses compiled are the effective doses, sum of external and internal exposure.
- (3) “Maximum dose,” “collective dose,” “average dose,” and “%” were rounded to one decimal place. Some discrepancy which total percent values are other than 100% may be caused by this procedure.
- (4) The age of the workers were based on the time of March 31, 2025.
- (5) The “Total number” of radiation workers were compiled based on distinct individuals, so that workers who worked at more than one nuclear site were counted as one.

【Dose Limits for radiation workers】

The statutory dose limits for radiation workers is 100 millisieverts (mSv) over five years and 50 mSv in one year, the dose limit for female workers, excluding those who indicate no pregnancy and those who are pregnant is 5 mSv per 3 months with the dose limit above. Five-year period refers to the statutory period that started on April 1, 2001 and has been renewed every subsequent five years.

【Definition of terminology】

- (1) Radiation Worker: Worker who is 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 registered in RADREC are compiled as fiscal year data.
- (3) Five-year exposure doses: Exposure doses accumulated in the statutory five-year period to control long-term dose limit. The first period started on April 1, 2001, with exposure doses accumulating every subsequent five years.
- (4) Number of work sites in a year: Number of work sites in a year means the number of nuclear sites where workers were engaged in radiation work during the fiscal year when the statistical data

were compiled. The total number of work sites in FY 2024 is 34. Even if the worker was engaged in radiation work at one nuclear site in several times in a year, that counted as one work site.

(5) Number of work sites in four years: Number of work sites in four years means the number of nuclear sites where workers were engaged in radiation works during the period of statistical data compilation (FY 2021–2024).

List of dose statistics

1. Dose Distribution of Workers by Age {FY 2024}(Table)
2. Dose Distribution of Workers by Age {FY 2024}(Figure)
3. Dose Distribution of Workers by Age {FY 2024}(Excluding the Data for Fukushima Daiichi Nuclear Power Plant) (Table)
4. Dose Distribution of Workers by Age {FY 2024}(Excluding the data for Fukushima Daiichi Nuclear Power Plant) (Figure)
5. Annual Trends of Numbers of Workers by Age {FY 2020–2024} (Figure)
6. Annual Trends of Numbers of Workers by Dose Range {FY 2020–2024} (Figure)
7. Dose Distribution of Workers by Gender {FY 2024} (Table)
8. Dose Distribution of Workers by Number of Work Sites {FY 2024} (Table)
9. Ratio of Number of Workers by Number of Work Sites {FY 2024} (Figure)
10. Annual Trends of Ratio of Workers by Number of Work Sites {FY 2020–2024} (Figure)
11. Dose Distribution of Workers by Number of Work Sites {FY 2024}(Excluding the Data for Fukushima Daiichi Nuclear Power Plant)(Table)
12. Dose Distribution of Workers by Number of Work Sites {FY 2024} (Excluding the Data for Fukushima Daiichi Nuclear Power Plant)(Figure)
13. Transient Dose Distribution of Workers by Number of Work Sites in Latest four Years {FY 2021–2024}(Table)

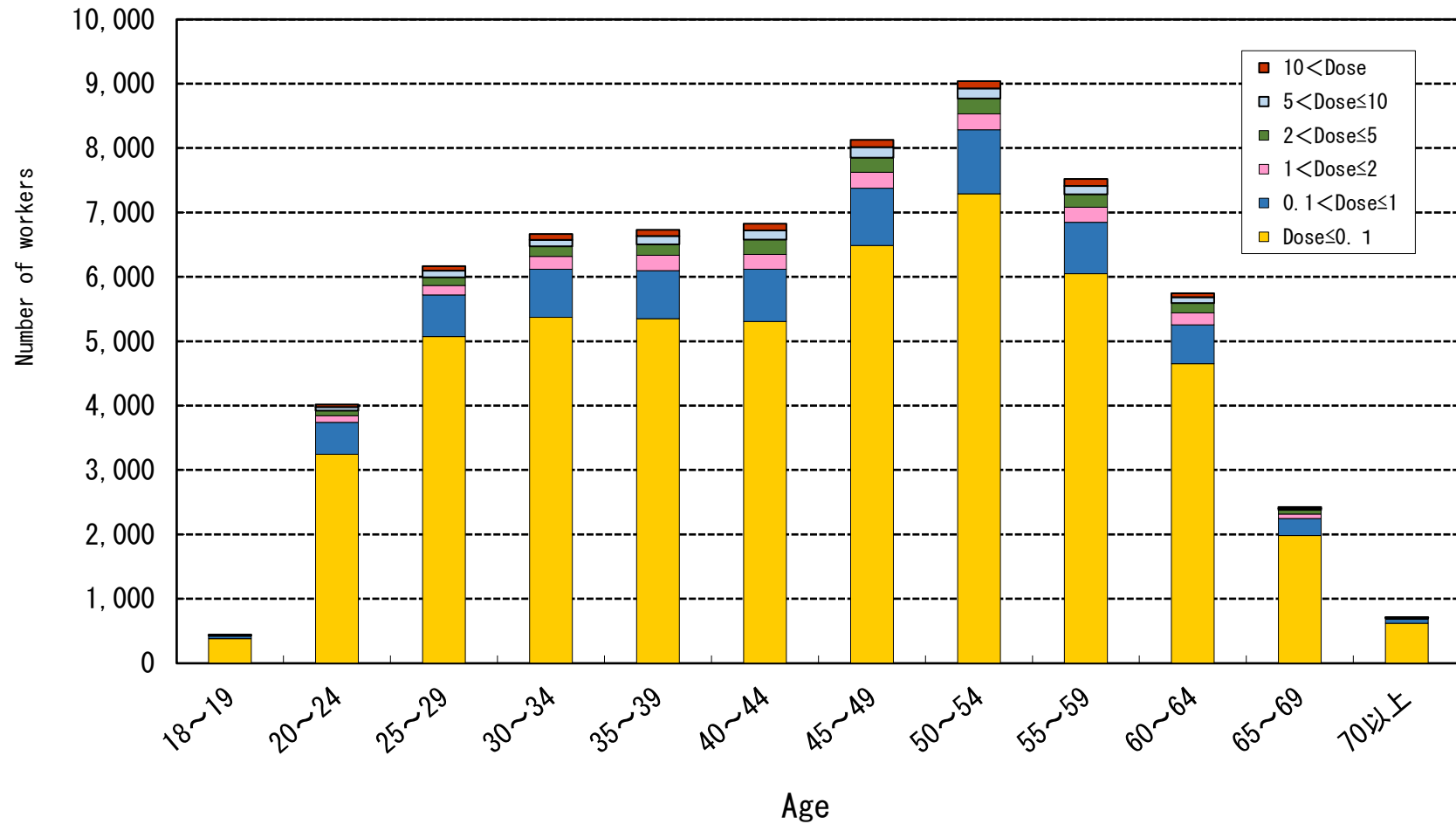
1. Dose Distribution of Workers by Age {FY 2024}

Dose (mSv) Age	Number of workers									Dose		
	Dose≤0.1	0.1<Dose ≤1	1<Dose ≤2	2<Dose ≤5	5<Dose ≤10	10<Dose ≤15	15<Dose ≤20	20< Dose	Total No. of workers (%)	Collective dose (person・mSv)	Mean (mSv)	Max (mSv)
18～19	381	40	10	2	3	1	0	0	437 (0.7)	74.2	0.2	13.8
20～24	3,247	494	104	79	56	37	2	0	4,019 (6.2)	1,527.3	0.4	15.4
25～29	5,073	648	147	126	104	62	6	0	6,166 (9.6)	2,536.6	0.4	16.1
30～34	5,371	749	197	156	99	88	4	0	6,664 (10.3)	3,052.7	0.5	16.1
35～39	5,348	747	238	173	130	86	9	0	6,731 (10.4)	3,475.4	0.5	16.5
40～44	5,305	811	233	227	145	92	12	0	6,825 (10.6)	3,855.0	0.6	16.6
45～49	6,485	890	248	226	167	106	7	0	8,129 (12.6)	4,193.6	0.5	16.3
50～54	7,292	992	249	236	158	104	9	0	9,040 (14.0)	4,197.4	0.5	16.4
55～59	6,048	799	235	199	129	98	13	0	7,521 (11.7)	3,799.7	0.5	16.6
60～64	4,653	601	188	152	88	63	2	0	5,747 (8.9)	2,498.3	0.4	16.8
65～69	1,982	266	67	66	23	18	1	0	2,423 (3.8)	840.2	0.3	15.4
70以上	620	64	7	11	5	7	0	0	714 (1.1)	210.4	0.3	14.5
Total No. of workers (%)	51,805 (80.4)	7,101 (11.0)	1,923 (3.0)	1,653 (2.6)	1,107 (1.7)	762 (1.2)	65 (0.1)	0 (0.0)	64,416 (100.0)	—	—	—
Collective Dose (person・mSv)	343.1	3,133.4	2,799.5	5,346.2	8,133.4	9,488.4	1,016.8	0.0	—	30,260.8	0.5	16.8

[Notes]

- How to read the numbers in table above:The number "147" in the box for the age row of "25～29" and the dose column of "1<Dose≤2" means that there were 147 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 millisieverts in FY 2022.
- The workers' ages are calculated as of March 31, 2025.

2. Dose Distribution of Workers by Age {FY 2024}



* This figure is based on the data in the Table 1 "Dose Distributin of Workers by Age {FY 2024}".

3. Dose Distribution of Workers by Age{FY 2024}

(Excluding the Data for Fukushima-Daiichi Nuclear Power Plant)

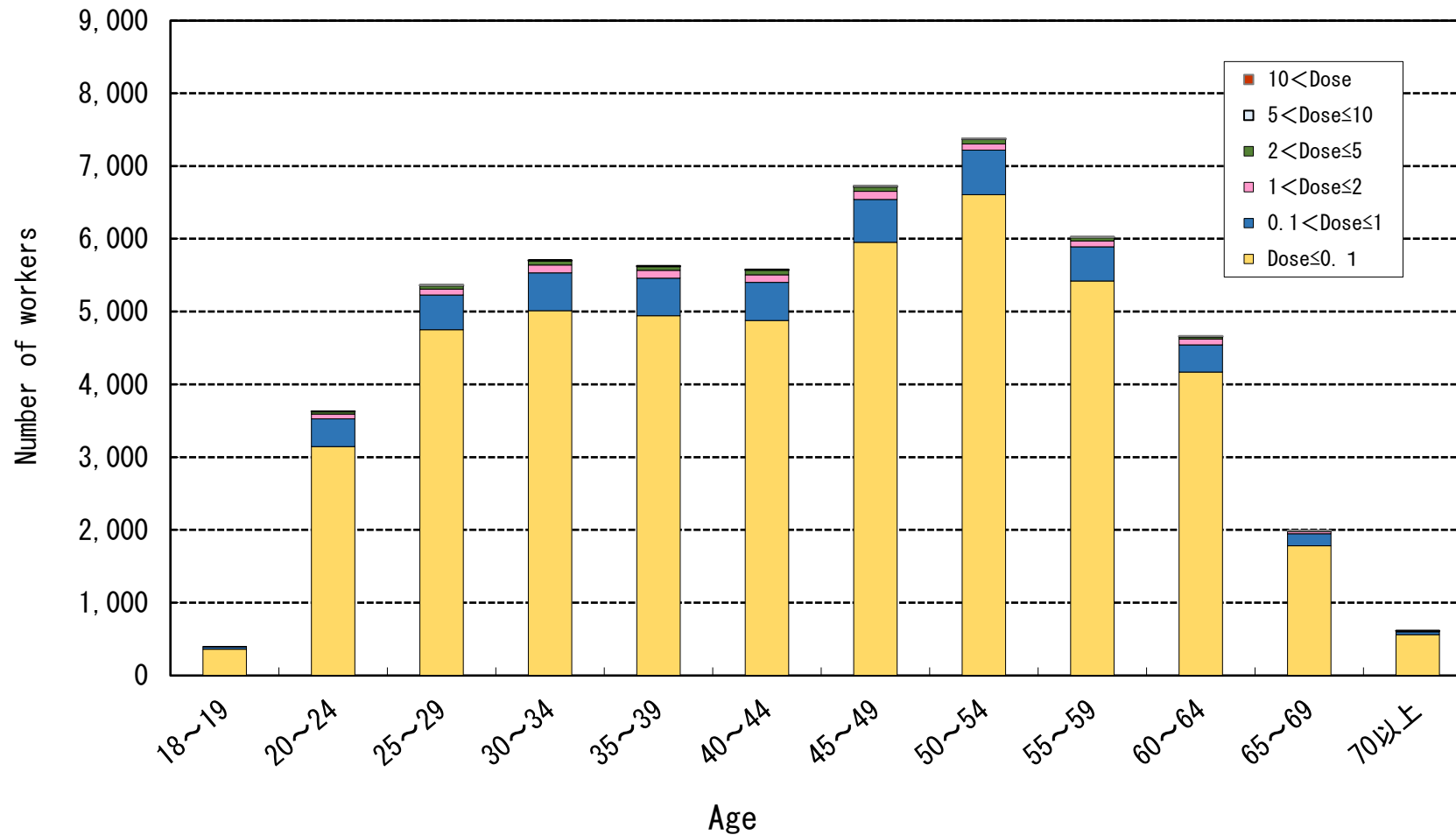
Dose (mSv) Age	Number of workers									Dose		
	Dose≤0.1	0.1<Dose ≤1	1<Dose ≤2	2<Dose ≤5	5<Dose ≤10	10<Dose ≤15	15<Dose ≤20	20< Dose	Total No. of workers (%)	Collective dose (person・mSv)	Mean (mSv)	Max (mSv)
18～19	362	29	7	0	0	0	0	0	398 (0.7)	23.2	0.1	2.0
20～24	3,143	384	66	34	4	0	0	0	3,631 (6.8)	401.8	0.1	7.0
25～29	4,750	479	79	46	10	4	1	0	5,369 (10.0)	613.6	0.1	15.9
30～34	5,011	522	106	61	7	0	0	0	5,707 (10.6)	633.3	0.1	7.2
35～39	4,941	518	109	54	7	0	0	0	5,629 (10.5)	603.9	0.1	7.0
40～44	4,878	523	103	65	10	0	0	0	5,579 (10.4)	648.0	0.1	8.9
45～49	5,951	588	113	64	8	1	0	0	6,725 (12.5)	708.4	0.1	10.6
50～54	6,607	611	87	62	8	3	0	0	7,378 (13.7)	662.0	0.1	12.6
55～59	5,419	471	81	46	9	1	1	0	6,028 (11.2)	563.6	0.1	16.0
60～64	4,169	375	78	32	7	1	0	0	4,662 (8.7)	437.2	0.1	10.5
65～69	1,781	167	24	15	3	1	0	0	1,991 (3.7)	184.0	0.1	11.4
70以上	560	39	5	6	1	0	0	0	611 (1.1)	48.6	0.1	5.9
Total No. of workers (%)	47,572 (88.6)	4,706 (8.8)	858 (1.6)	485 (0.9)	74 (0.1)	11 (0.0)	2 (0.0)	0 (0.0)	53,708 (100.0)	—	—	—
Collective Dose (person・mSv)	273.4	1,912.2	1,245.0	1,455.7	481.4	128.0	31.9	0.0	—	5,527.6	0.1	16.0

[Notes]

- 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 read the numbers in table above: The number "79" in the box for the age row of "25～29" and the dose column of "1<Dose≤2" means that there were 79 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 millisieverts in FY 2024.
- The workers' ages are calculated as of March 31, 2025.

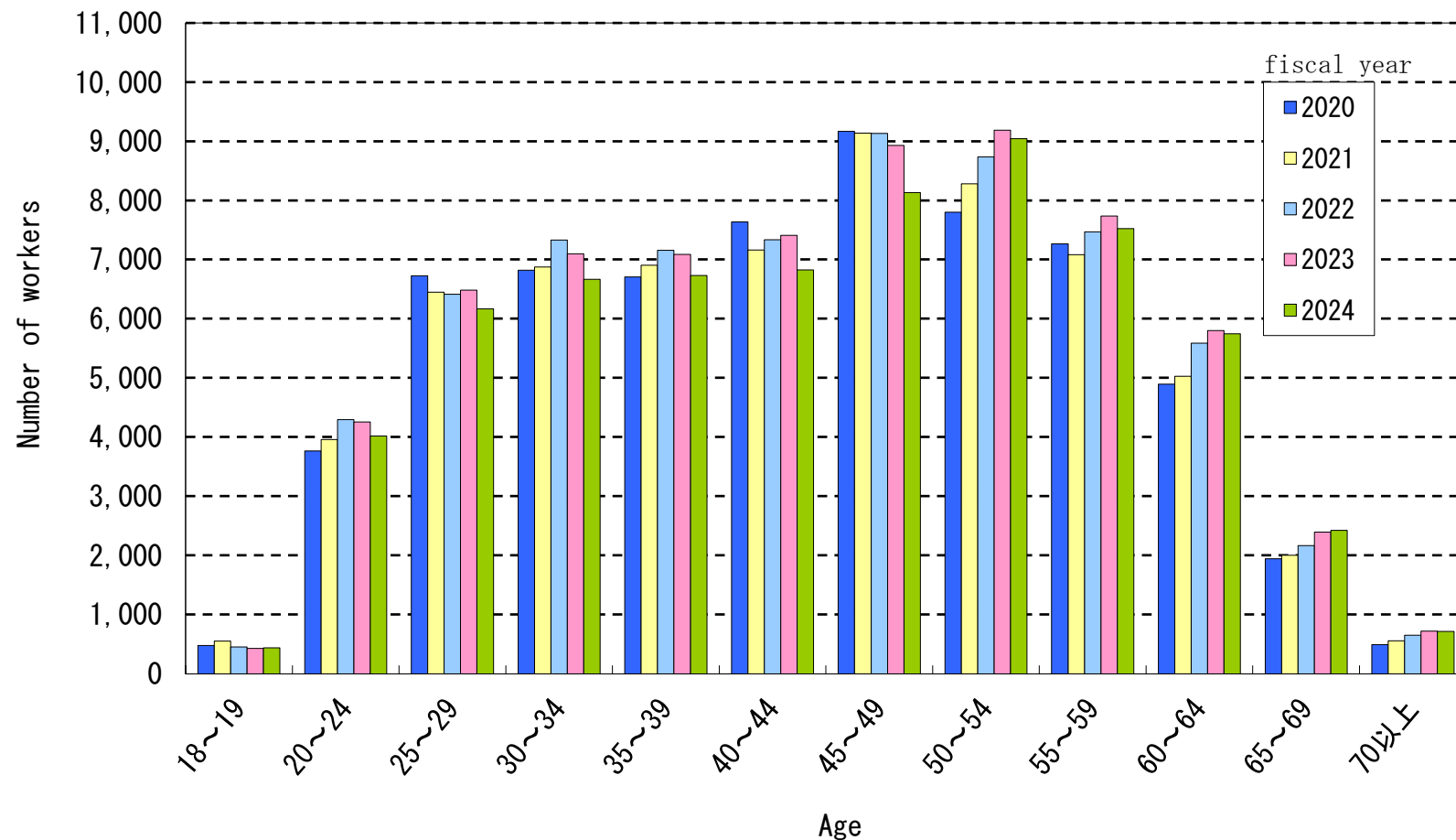
4. Dose Distribution of Workers by Age {FY 2024}

(Excluding the Data for Fukushima-Daiichi Nuclear Power Plant)



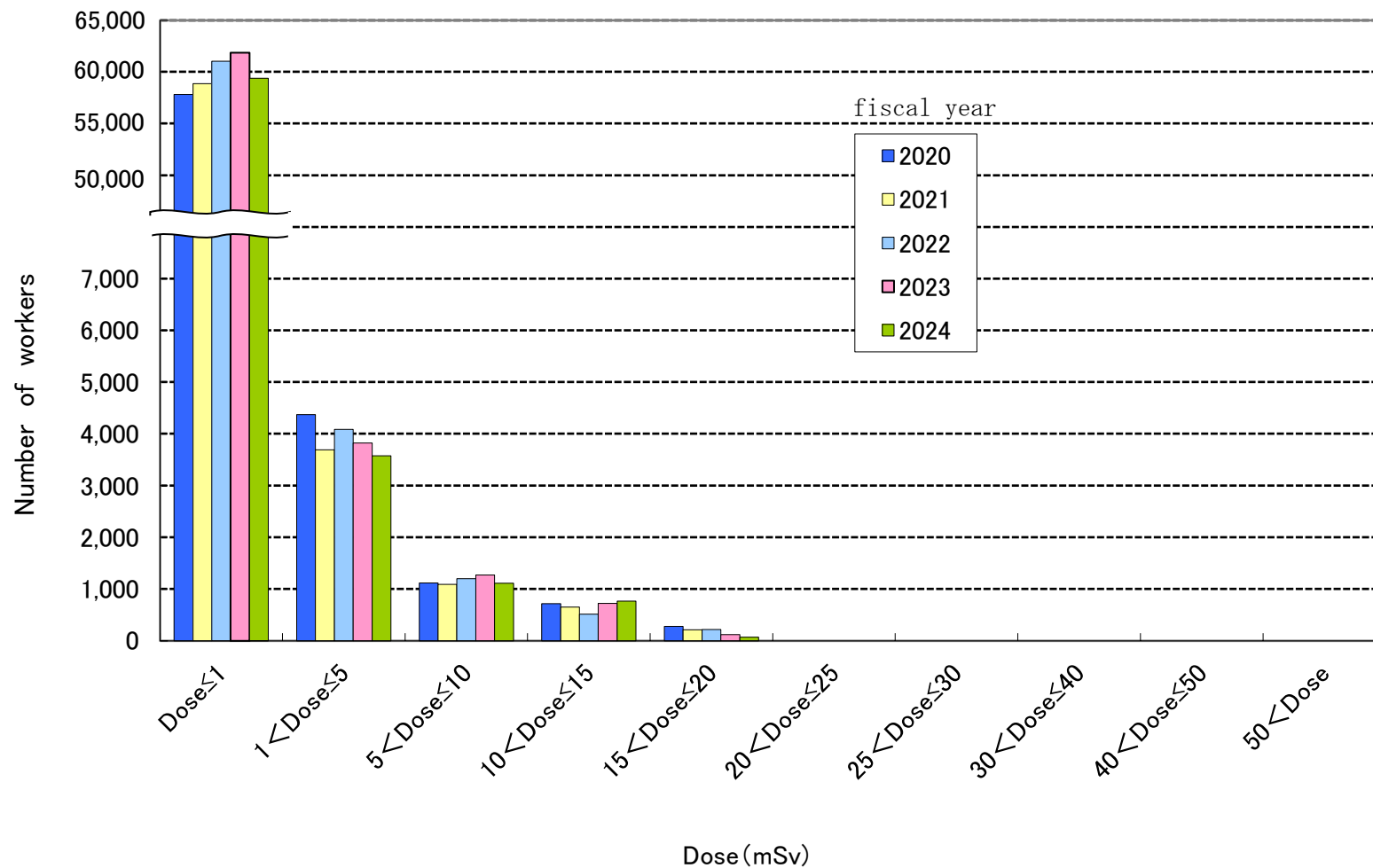
* This figure is based on the data in the Table 3 "Dose Distribution of Workers by Age {FY 2024} (Excluding the data for Fukushima-Daiichi Nuclear Power Plant)".

5. Annual Trends of Number of Workers by Age {FY 2020—2024}



* This figure is based on the data in the Table 1 "Dose Distributin of Workers by Age {FY 2024}" and those of the latest four years {FY 2020—2023}.

6. Annual Trends of Number of Workers by Dose Range {FY 2020—2024}



* This figure is based on the data in the Table 1 "Dose Distributin of Workers by Age {FY 2024}" and those of the latest four years {FY 2020—2023}.

7. Dose Distribution of Workers by Gender {FY 2024}

Gender Dose (mSv)	Male (%)	Female (%)	Total No. of workers (%)	Collective dose (person·mSv) (%)
Dose ≤ 0.1	50,430 (80.0)	1,375 (97.4)	51,805 (80.4)	343.1 (1.1)
$0.1 < \text{dose} \leq 1$	7,069 (11.2)	32 (2.3)	7,101 (11.0)	3,133.4 (10.4)
$1 < \text{dose} \leq 2$	1,918 (3.0)	5 (0.4)	1,923 (3.0)	2,799.5 (9.3)
$2 < \text{dose} \leq 5$	1,653 (2.6)	0 (0.0)	1,653 (2.6)	5,346.2 (17.7)
$5 < \text{dose} \leq 10$	1,107 (1.8)	0 (0.0)	1,107 (1.7)	8,133.4 (26.9)
$10 < \text{Dose} \leq 15$	762 (1.2)	0 (0.0)	762 (1.2)	9,488.4 (31.4)
$15 < \text{Dose} \leq 20$	65 (0.1)	0 (0.0)	65 (0.1)	1,016.8 (3.4)
$20 < \text{Dose}$	0 (0.0)	0 (0.0)	0 (0.0)	0.0 (0.0)
Total No. of workers (%)	63,004 (100.0)	1,412 (100.0)	64,416 (100.0)	—
Total No. of workers Ratio of man and famel (%)	97.8	2.2	100.0	—
Collective dose (person · mSv)	30,237.8	23.0	—	30,260.8 (100.0)
Mean dose (mSv)	0.5	0.0	0.5	—
Max dose (mSv)	16.8	1.7	16.8	—

[Notes]

- How to read the numbers in table above : The number "1,918 " in the box of the dose row " $1 < \text{Dose} \leq 2$ " and the "Male" column means that there were 1,918 man workers whose radiation doses were in the range of greater than 1 and less than or equal to 2 millisieverts in FY 2024.

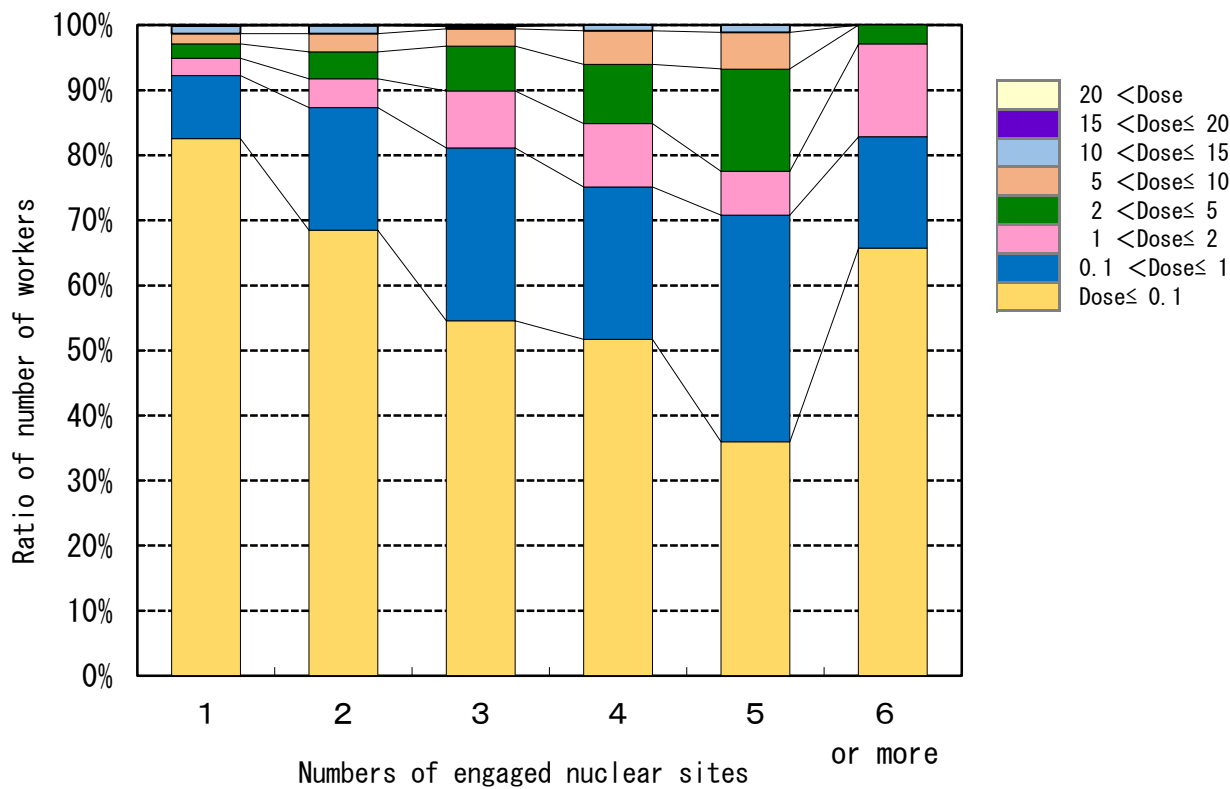
8. Dose Distribution of Workers by Number of Work Sites{FY 2024}

No. of Work sites Dose (mSv)	Number of workers						
	1	2	3	4	5	6 or more	Total No. of workers (%)
Dose ≤ 0.1	46,594	4,301	674	181	32	23	51,805 (80.4)
$0.1 < \text{Dose} \leq 1$	5,472	1,182	328	82	31	6	7,101 (11.0)
$1 < \text{Dose} \leq 2$	1,491	279	108	34	6	5	1,923 (3.0)
$2 < \text{Dose} \leq 5$	1,263	258	85	32	14	1	1,653 (2.6)
$5 < \text{Dose} \leq 10$	873	178	33	18	5	0	1,107 (1.7)
$10 < \text{Dose} \leq 15$	677	77	4	3	1	0	762 (1.2)
$15 < \text{Dose} \leq 20$	58	4	3	0	0	0	65 (0.1)
$20 < \text{Dose}$	0	0	0	0	0	0	0 (0.0)
Total No. of workers (%)	56,428 (87.6)	6,279 (9.7)	1,235 (1.9)	350 (0.5)	89 (0.1)	35 (0.1)	64,416 (100.0)
Mean dose (mSv)	0.4	0.6	0.7	1.0	1.3	0.4	0.5

[Notes]

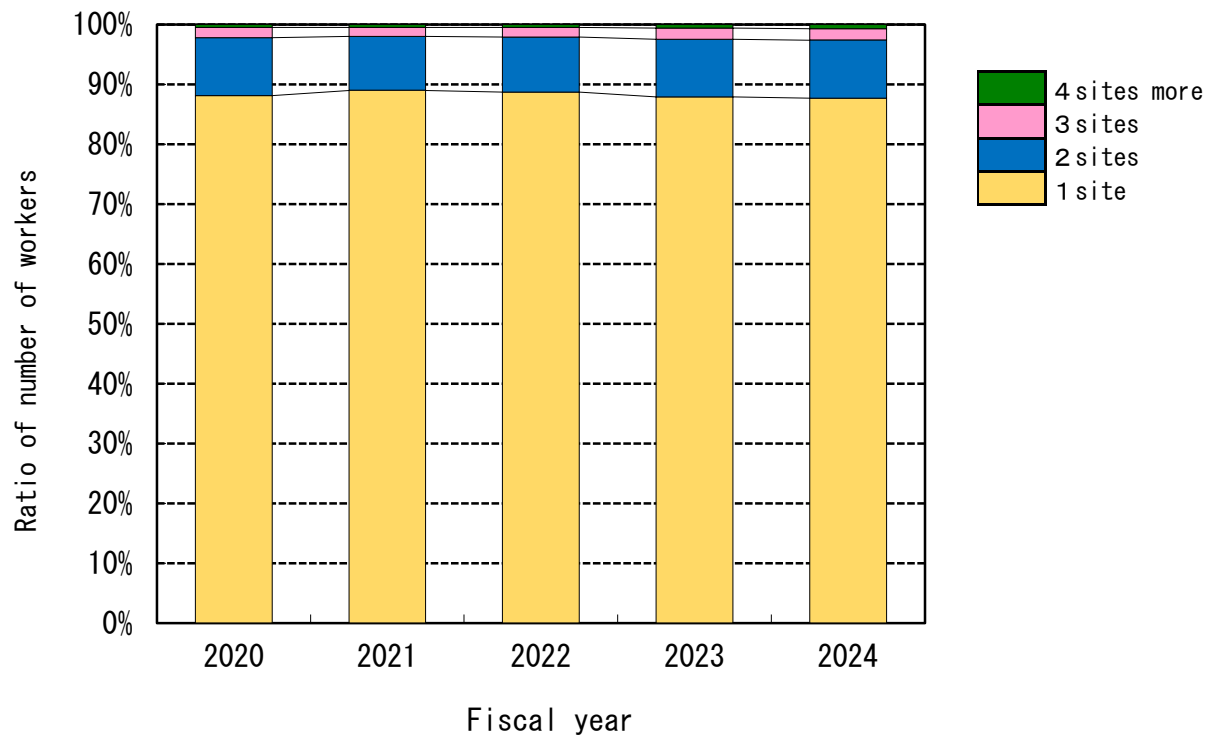
- How to read the numbers in table above : The number "32" in the box for the dose row of "Dose ≤ 0.1 " and the No. of work sites of "5" column means that there were 32 workers who were engaged in five work sites and whoes radiation doses were less than 5 millisievert in FY 2024.

9. Ratio of Number of Workers by Number of Work Sites {FY 2024}



* This figure is based on the data in the Table 8 "Dose Distribution of Workers by Number of Work Sites {FY 2024}".

10. Annual Trends of Ratio of Workers by Number
of Work Sites {FY 2020—2024}



* This figure is based on the data in the Table 8 “Dose Distribution of Workers by Number of Work Sites {FY 2024}” and those of the latest four years {FY 2020—2023}.

11. Dose Distribution of Workers by Number of Work Sites {FY 2024}
(Excluding the Data for Fukushima-Daiichi Nuclear Power Plant)

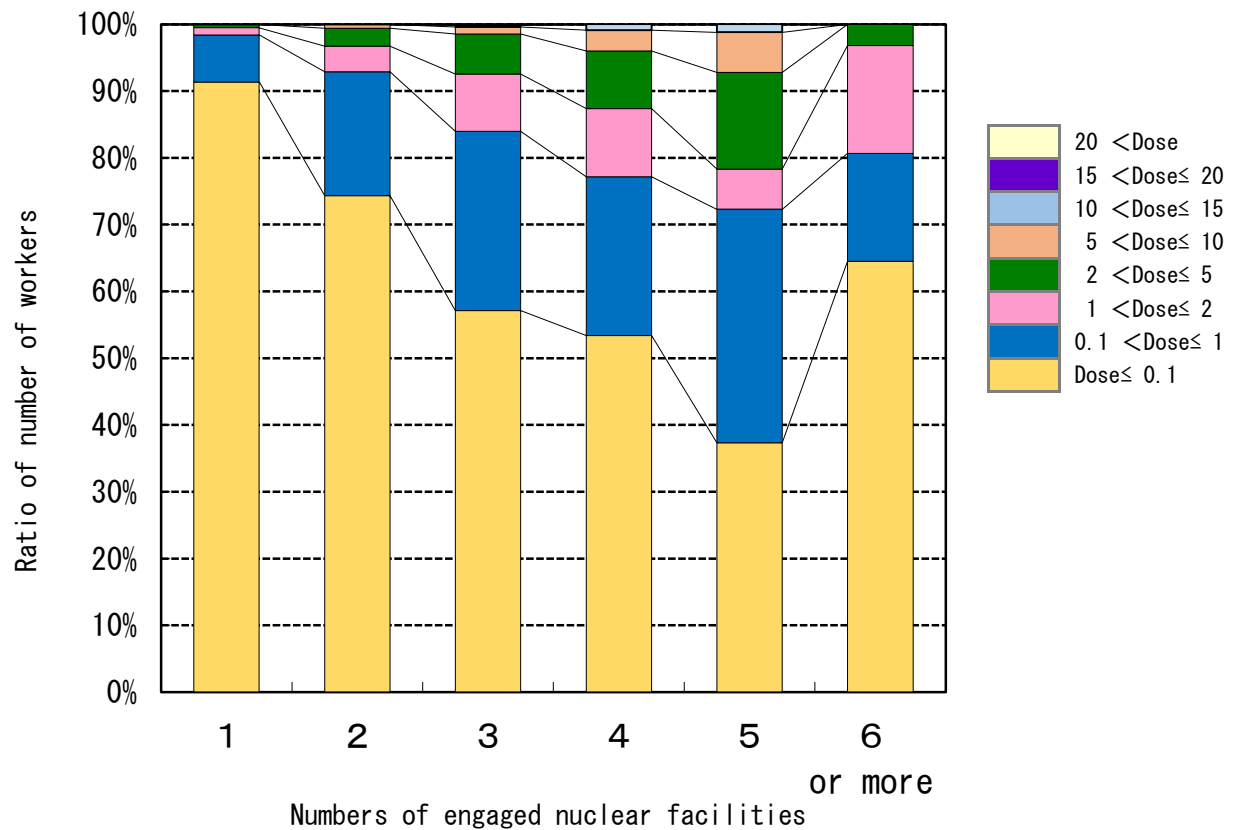
Dose (mSv) \ No. of Work sites	Number of workers						Total No. of workers (%)
	1	2	3	4	5	6 or more	
Dose $\leq$ 0.1	42,680	4,016	652	173	31	20	47,572 (88.6)
0.1 < Dose $\leq$ 1	3,285	1,004	306	77	29	5	4,706 (8.8)
1 < Dose $\leq$ 2	510	207	98	33	5	5	858 (1.6)
2 < Dose $\leq$ 5	230	146	68	28	12	1	485 (0.9)
5 < Dose $\leq$ 10	17	30	12	10	5	0	74 (0.1)
10 < Dose $\leq$ 15	2	2	3	3	1	0	11 (0.0)
15 < Dose $\leq$ 20	0	0	2	0	0	0	2 (0.0)
20 < Dose	0	0	0	0	0	0	0 (0.0)
Total No. of workers (%)	46,724 (87.0)	5,405 (10.1)	1,141 (2.1)	324 (0.6)	83 (0.2)	31 (0.1)	53,708 (100.0)
Mean dose (mSv)	0.1	0.3	0.6	0.8	1.1	0.8	0.1

[Notes]

- 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, Inc.
- How to read the numbers in table above : The number "31" in the box for the dose row of "Dose $\leq$ 0.1" and the No. of work sites of "5" column means that there were 31 workers who were engaged in five nuclear sites and whoes radiation doses were less than 5 millisievert in FY 2024.

12. Dose Distribution of Workers by Number of Work Sites {FY 2024}

(Excluding the Data for Fukushima-Daiichi Nuclear Power Plant)



* This figure is based on the data in the Table 11 "Dose Distribution of Workers by Number of Work Sites {FY 2024}".

13. Transient Dose Distribution of Workers by Number of Work Sites
in Latest four Years {FY 2021–2024}

No. of work sites in four years Dose (mSv)	Number of workers								Total No. of workers (%)
	1	2	3	4	5	6	7	8 or more	
Dose ≤ 1	68,607	11,896	3,133	1,007	328	128	61	58	85,218 (85.9)
$1 < \text{Dose} \leq 5$	4,432	1,552	744	360	155	89	35	20	7,387 (7.4)
$5 < \text{Dose} \leq 10$	1,698	540	238	114	69	28	10	10	2,707 (2.7)
$10 < \text{Dose} \leq 15$	1,060	292	101	57	21	12	10	3	1,556 (1.6)
$15 < \text{Dose} \leq 20$	586	155	46	19	7	11	3	1	828 (0.8)
$20 < \text{Dose} \leq 25$	379	85	24	12	1	3	2	2	508 (0.5)
$25 < \text{Dose} \leq 30$	269	70	14	3	1	2	2	1	362 (0.4)
$30 < \text{Dose} \leq 40$	283	74	14	4	2	0	0	0	377 (0.4)
$40 < \text{Dose} \leq 50$	137	33	5	0	0	0	0	0	175 (0.2)
$50 < \text{Dose} \leq 60$	91	12	1	0	0	0	0	0	104 (0.1)
$60 < \text{Dose} \leq 70$	14	0	0	0	0	0	0	0	14 (0.0)
$70 < \text{Dose} \leq 80$	0	0	0	0	0	0	0	0	0 (0.0)
$80 < \text{Dose} \leq 90$	0	0	0	0	0	0	0	0	0 (0.0)
$90 < \text{Dose} \leq 100$	0	0	0	0	0	0	0	0	0 (0.0)
$100 < \text{Dose}$	0	0	0	0	0	0	0	0	0 (0.0)
Total no. of workers (%)	77,556 (78.2)	14,709 (14.8)	4,320 (4.4)	1,576 (1.6)	584 (0.6)	273 (0.3)	123 (0.1)	95 (0.1)	99,236 (100.0)
Mean dose (mSv)	1.1	1.6	1.8	2.2	2.5	3.3	3.6	2.7	1.3

[Notes]

- The statutory dose limits for radiation workers are 100 mSv per five years and 50 mSv per year. Five-year period started from April, 2001, so that FY 2021–2024 data are given above.
- How to read the numbers in table above : The number "114" in the box for the dose row of " $5 < \text{Dose} \leq 10$ " and in column of the No. of work sites in three years of "4" column means that there were 114 workers who engaged in radiation works at four work sites in four years and whose radiation doses were greater than 5 and less than or equal to 10 millisieverts from FY 2021 to 2024.