

# **Extract of the 2019 White Paper on Fire Service**

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**The Fire and Disaster Management Agency  
(FDMA)**

# Extract of the 2019 White Paper on Fire Service

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# Section 1 Fire Prevention

📖 Japanese Original P.71

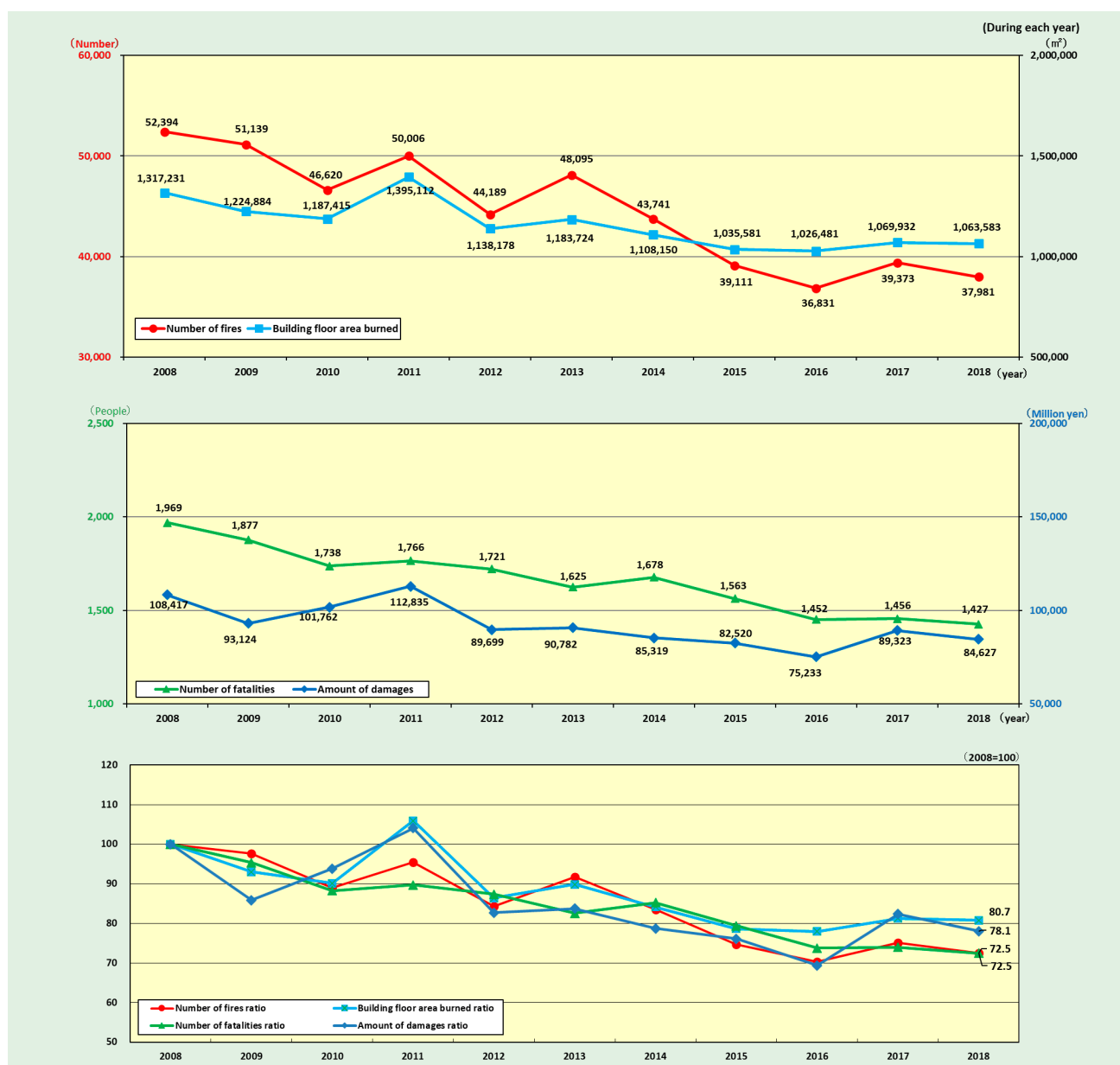
## Current Status and Recent Trends with Fires

Looking at the number of fires since 2008, there has been trending downwards. The number of fires that occurred in 2018 came to 37,981, falling to 1,392 (3.5%) compared to the previous year, which is 72.5% of the

number from ten years prior (the number of fires in 2008).

Furthermore, the number of fatalities from fires has also largely been trending downward since 2008. The number of fatalities from fires in 2018 came to 1,427, a decrease of 29 (2.0%) compared with the previous year, or 72.5% that from ten years ago (based on the number of fatalities from fires in 2008). (Fig. 1-1-1, Table 1-1-1)

Fig. 1-1-1 Changes in the number of fires and their trends



(Notes) 1 Prepared based on "Fire Reports".

2 The figures for each year are calculation of the fire that occurred in January to December. The same hold true in this section hereafter unless otherwise noted.

3 See the left axis for the number of fires, number of fatalities, number of fires ratio, building floor area burned ratio, number of fatalities ratio, and amount of damages ratio, and the right axis for the building floor area burned and the amount of damages.

4 The number of fires ratio, building floor area burned ratio, number of fatalities ratio, and amount of damages ratio are ratios found by taking the values from 2007 to be 100.

Table1-1-1 Status of fires

(During each year)

Classification	Unit	2008	2017 (A)	2018 (B)	Change (B) - (A) (C)	Rate of change (C) / (A) X 100 (%)
No. of fires	Fires	52,394	39,373	37,981	△ 1,392	△ 3.5
Building fires		30,053	21,365	20,764	△ 601	△ 2.8
Forest fires		1,891	1,284	1,363	79	6.2
Vehicle fires		5,358	3,863	3,660	△ 203	△ 5.3
Ship fires		101	72	69	△ 3	△ 4.2
Aircraft fires		3	6	1	△ 5	△ 83.3
Other fires		14,988	12,783	12,124	△ 659	△ 5.2
No. of buildings burned	Buildings	40,588	30,824	29,962	△ 862	△ 2.8
Totally destroyed		8,628	6,967	7,138	171	2.5
Half destroyed		2,761	1,677	1,658	△ 19	△ 1.1
Partially destroyed		11,548	8,063	7,833	△ 230	△ 2.9
Minor fire		17,651	14,117	13,333	△ 784	△ 5.6
Building floor area burned	m <sup>2</sup>	1,317,231	1,069,932	1,063,583	△ 6,349	△ 0.6
Building surface area burned	m <sup>2</sup>	148,018	111,304	117,981	6,677	6.0
Forest area burned	a	83,916	93,808	60,624	△ 33,184	△ 35.4
Fatalities	People	1,969	1,456	1,427	△ 29	△ 2.0
Injured	People	7,998	6,052	6,114	62	1.0
No. of households affected	Households	26,805	18,853	18,180	△ 673	△ 3.6
Totally destroyed		5,923	4,163	3,978	△ 185	△ 4.4
Half destroyed		2,139	1,305	1,233	△ 72	△ 5.5
Partially destroyed		18,743	13,385	12,969	△ 416	△ 3.1
No. of people affected	People	66,533	41,518	39,758	△ 1,760	△ 4.2
Amount of damages	Millions	108,417	89,323	84,627	△ 4,696	△ 5.3
Building fires		99,841	81,599	76,353	△ 5,246	△ 6.4
Forest fires		606	900	202	△ 698	△ 77.6
Vehicle fires		2,819	2,283	2,227	△ 56	△ 2.5
Ship fires		171	619	859	240	38.8
Aircraft fires		1,192	43	730	687	1597.7
Other fires		3,371	3,105	3,172	67	2.2
Explosions		417	772	1,084	312	40.4
Fire outbreak rate	Fires/10,000	4.1	3.1	3.0	△ 0.1	—

(Notes) 1 Prepared from "Fire Reports".

2 The figures for each year are calculations of the fires that occurred in January to December. The same holds true in this section hereafter unless otherwise noted.

3 "Building fires" refer to fires that burn buildings or the contents contained therein. The same holds true in this section hereafter unless otherwise noted.

4 "Forest fires" refer to fires that burn forests, wilderness, or grassland. The same holds true in this section hereafter unless otherwise noted.

5 "Vehicle fires" refer to fires that burn automotive vehicles, railway vehicles, trailer vehicles, or their cargo. The same holds true in this section hereafter unless otherwise noted.

6 "Ship fires" refer to fires that burn ships or their cargo. The same holds true in this section hereafter unless otherwise noted.

7 "Aircraft fires" refer to fires that burn aircraft or their cargo. The same holds true in this section hereafter unless otherwise noted.

8 "Other fires" refer to fires other than building fires, forest fires, vehicle fires, ship fires and aircraft fires (fires involving vacant land, fields, roads, flood plains, waste collection sites, outdoor item collection sites, train tracks, utility poles, etc.). The same holds true in this section hereafter unless otherwise noted.

9 Fatalities includes those people who were injured by fires and passed away within 48 hours. The same holds true in this section hereafter unless otherwise noted.

10 The fire outbreak rate refers to the number of fires per 10,000 people. The same holds true in this section hereafter unless otherwise noted.

11 Amount of damages and so forth include cases that are still under investigation, and so this may change. The same holds true in this section hereafter unless otherwise noted.

12 The symbol '△' indicates negative numbers. The same holds true in this section hereafter unless otherwise noted.

13 Rate of change was found by rounding up less than whole numbers with the displayed units. The same holds true in this section hereafter unless otherwise noted.

14 The population for 2006 was found from the Basic Resident Register as of March 31, the population for 2015 was found from a Survey on the Current Status of Fire and Disaster Prevention and Earthquake Countermeasures as of March 31 for each year, and the population for 2016 was found from the Basic Resident Register as of January 1.

15 If a fire is spread across more than two types of fires, it is aggregated into the number of fires based on which type had the larger amount of damages. For the amount of damages, this is aggregated for each type of fire by the objects damaged in the fire (building, vehicle, forest, ship, aircraft, or other). The same holds true in this section hereafter unless otherwise noted.

16 The amount of damages from "Explosions" is posted to "Explosions" within "Amount of damages" without regard to the type of fire.

17 The figures in the total column may not align with the totals for each figure due to rounding. The same holds true in this section hereafter unless otherwise noted.

—omitted—

## Current Status of Fire Prevention Administration

### 1. Current Status of Residential Fire Prevention Measures

The number of residential fires in 2018 (10,269, excluding those from arson) accounted for roughly 50% of the number of building fires (19,430, excluding those from arson). What is more, the number of fatalities from residential fires (946, excluding suicides by arson), accounts for roughly 90% of the number of fatalities from building fires (1,051, excluding suicides by arson). (Attachment 1-1-25 untranslated) In addition, elderly people age 65 or older account for approximately 70% of the fatalities from residential fires.

As a result of the revision of the Fire Service Act in 2004, the installation of residential fire alarms became mandatory for newly-built residences from June 2006, and for existing residences by June 2011 in all municipalities based on their ordinances. The Fire and Disaster Management Agency (FDMA) held the Committee on Measures to Install Residential Fire Alarms. Based on the Basic Policy on

Measures to Install Residential Fire Alarms established at this committee, various initiatives have been deployed to ensure that residential fire alarms are thoroughly installed and maintained. This is done by the fire departments throughout Japan in cooperation with volunteer fire corps, women's (female) firefighting clubs, voluntary disaster prevention organizations, and others. As of June 1, 2019, the nationwide installation rate\*<sup>1</sup> was 82.3% and the ordinance compliance rate\*<sup>2</sup> was 67.9%. When viewed by prefecture, Fukui Prefecture had the highest installation rate, and the highest ordinance compliance rate. (Table 1-1-15)

### 2. Fire Prevention Properties

The Fire Service Act defines the primary properties that are eligible for fire prevention administration, such as architectural structures, as “fire prevention properties.” It also mandates that personnel structures for fire prevention be established, fire protection equipment etc.\*<sup>3</sup> be installed, and flame retardant goods be used at those fire prevention properties listed in Appended Table I of the Ordinance of Enforcement for the Fire Service Act according to their purpose, size, and so forth.

**Table 1-1-15 Installation rate of residential fire alarms and rate of compliance with the ordinance by prefecture (June 1, 2019)**

Prefecture	Installation rate	Ordinance compliance rate	Prefecture	Installation rate	Ordinance compliance rate
All of Japan	82.3%	67.9%		76.8% (39)	64.4% (28)
Hokkaido	82.0% (19)	67.6% (18)	Shiga	82.7% (17)	62.2% (34)
Aomori	75.1% (41)	59.0% (39)	Kyoto	87.9% (6)	73.2% (6)
Iwate	83.8% (13)	66.9% (21)	Osaka	83.8% (13)	77.0% (5)
Miyagi	91.4% (2)	65.0% (26)	Hyogo	87.2% (8)	70.4% (12)
Akita	81.8% (21)	67.4% (19)	Nara	74.0% (42)	63.0% (31)
Yamagata	81.7% (22)	60.8% (38)	Wakayama	79.1% (31)	62.5% (32)
Fukushima	77.4% (37)	54.5% (44)	Tottori	83.0% (15)	63.6% (30)
Ibaraki	72.5% (44)	58.8% (40)	Shimane	82.6% (18)	61.7% (35)
Tochigi	76.8% (39)	62.4% (33)	Okayama	78.0% (35)	65.0% (26)
Gunma	70.7% (45)	54.1% (45)	Hiroshima	87.5% (7)	80.6% (3)
Saitama	77.5% (36)	65.2% (25)	Yamaguchi	80.9% (24)	67.7% (17)
Chiba	80.0% (27)	65.5% (24)	Tokushima	80.0% (27)	68.4% (15)
Tokyo	89.3% (3)	72.2% (7)	Kagawa	77.1% (38)	64.0% (29)
Kanagawa	84.1% (12)	72.2% (7)	Ehime	78.9% (33)	66.8% (22)
Niigata	86.5% (9)	71.2% (11)	Kochi	68.5% (46)	46.4% (46)
Toyama	86.4% (10)	67.8% (16)	Fukuoka	81.7% (22)	71.7% (10)
Ishikawa	88.1% (5)	84.0% (2)	Saga	73.8% (43)	56.5% (43)
Fukui	94.5% (1)	88.6% (1)	Nagasaki	78.4% (34)	58.0% (42)
Yamanashi	79.1% (31)	70.3% (13)	Kumamoto	79.5% (29)	58.6% (41)
Nagano	82.0% (19)	66.0% (23)	Oita	85.0% (11)	69.5% (14)
Gifu	80.9% (24)	61.6% (36)	Miyazaki	82.9% (16)	71.8% (9)
Shizuoka	79.4% (30)	67.0% (20)	Kagoshima	88.7% (4)	79.1% (4)
Aichi	80.7% (26)	60.9% (37)	Okinawa	58.2% (47)	43.0% (47)

(Notes) 1 ( ) : The numbers in parenthesis show the rank in order starting with the prefectures with the highest installation rates and so forth.

2 Each number contains a certain error due to sample survey.

\*1 The “installation rate” refers to the share of households that have installed residential fire alarms in at least one location of the sections of their home in which they are obligated to do so due to municipal fire prevention ordinances (including households that are exempt from installing residential fire alarms on account of having installed fire alarm systems, etc.) out of the total number of households.

\*2 The “ordinance compliance rate” refers to the share of households that have installed residential fire alarms in every section of their home in which they are obligated to do so due to municipal fire prevention ordinances (including households that are exempt from installing residential fire alarms on account of having installed fire alarm systems, etc.) out of the total number of households.

\*3 Fire protection equipment etc.: Equipment for extinguishing fires, evacuation, and other fire protection activities (fire extinguishers, sprinkler systems, automatic fire alarms, fire escape equipment, guide lamps, etc.)



As of March 31, 2019, the number of fire prevention properties throughout Japan came to 4,185,804 (this is the number obtained from the Survey on the Actual Conditions of Fire Prevention Properties (targeting those fire prevention properties listed in Appended Table I of the Ordinance of Enforcement for the Fire Service Act that are listed in (1) through (16-3) and have a total area of 150m<sup>2</sup> or larger, and those listed in (17) through (19)); the same hereafter).

Moreover, the number of fire prevention properties in the 21 major cities (special wards of Tokyo and ordinance-designated cities) came to 1,188,488, accounting for 28.4% of the total fire prevention properties throughout Japan. Those properties that are particularly concentrated in urban areas include underground malls (86.9% of the

national total), semi-underground malls\*<sup>4</sup> (85.7% of the national total), stores engaged in sex-related businesses, etc. (53.1% of the national total). (Table 1-1-16)

### 3. Fire Prevention Management System

#### (1) Fire Protection Managers

The Fire Service Act mandates that people with authority when it comes to managing fire prevention properties that contain large numbers of people (hereafter referred to as “management officials”) undertake the operations necessary for fire protection management. These include appointing the fire protection managers\*<sup>5</sup> that form the core of voluntary fire protection management structures, as well as preparing firefighting plans for fire

**Table 1-1-16 Number of fire prevention properties**

(As of March 31, 2019)

Classification of fire prevention properties		Nationwide	21 major cities	Percentage (%)	Classification of fire prevention properties		Nationwide	21 major cities	Percentage (%)	
(1)	a Theaters, etc.	4,428	653	14.7	(6)	(3) Nursery schools, etc.	35,388	7,529	21.3	
	b Public halls, etc.	65,435	6,175	9.4		(4) Child development support centers, etc.	3,139	485	15.5	
(2)	a Cabarets, etc.	843	131	15.5		(5) Welfare centers for disabled persons, etc.	20,409	3,326	16.3	
	b Game centers, etc.	9,823	1,860	18.9			Subtotal	82,284	15,314	18.6
	c Stores engaged in sex-related businesses, etc.	192	102	53.1		d Kindergartens, etc.	16,652	3,980	23.9	
	d Karaoke box and stores, etc.	2,592	638	24.6	(7) Schools	126,499	28,237	22.3		
(3)	a Restaurants, etc.	2,781	507	18.2	(8) Libraries, etc.	7,638	857	11.2		
	b Eating and drinking houses	84,391	17,088	20.2	(9)	a Special bathhouses	1,438	657	45.7	
(4)	Department stores, etc.	160,298	28,834	18.0		b General bathhouses	4,327	1,030	23.8	
(5)	a Hotels, etc.	60,480	7,337	12.1	(10) Railroad depots	3,876	1,394	36.0		
	b Apartment houses, etc.	1,357,705	520,302	38.3	(11) Temples and shrines, etc.	58,319	12,191	20.9		
(6)	a	(1) Hospitals that they need patient assistance for evacuation	6,765	1,094	16.2	(12)	a Factories, etc.	492,825	72,485	14.7
		(2) Clinics with 19 beds or less that they need patient assistance for evacuation	3,502	680	19.4		b Studios	428	148	34.6
		(3) Hospitals(not including those listed in (1)), Clinics with 19 beds or less(not including those listed in (2)) and Birth center with bed	9,576	2,432	25.4	(13)	a Parking lots, etc.	52,184	14,733	28.2
		(4) Clinics with no in-patient capacity, Birth center without bed	44,024	8,269	18.8		b Aircraft hangars	705	97	13.8
	Subtotal		63,867	12,475	19.5	(14) Warehouses	334,154	55,082	16.5	
	b	(1) Short-term welfare facilities for the elderly	42,508	7,943	18.7	(15) Offices, etc.	485,979	109,892	22.6	
		(2) Shelters	242	32	13.2	(16)	a Specified multipurpose fire prevention properties	373,532	140,500	37.6
		(3) Nurseries	162	32	19.8		b Unspecified multipurpose fire prevention properties	271,916	124,598	45.8
		(4) Welfare facilities for disabled children	474	73	15.4	(16-2) Underground malls	61	53	86.9	
		(5) Support facilities for the disabled	6,567	1062	16.2	(16-3) Semi-underground malls	7	6	85.7	
		Subtotal		49,953	9,142	18.3	(17) Cultural properties	8,926	1,518	17.0
	c	(1) Elderly daycare centers, etc.	23,124	3,931	17.0	(18) Arcades	1,266	472	37.3	
(2) Rehabilitation facilities		224	43	19.2	(19) Mountain forests	0	0	—		
					Total		4,185,804	1,188,488	28.4	

(Notes) 1 Prepared based on the Survey on the Actual Conditions of Fire Prevention Properties (targeting those fire prevention properties listed in Appended Table I of the Ordinance of Enforcement for the Fire Service Act that are listed in (1) through (16-3) and have a total area of 150m<sup>2</sup> or larger, and those listed in (17) through (19); the same hereafter).

2 The 21 major cities refer to the 23 wards of Tokyo and 20 ordinance-designated cities (Sapporo City, Sendai City, Saitama City, Chiba City, Yokohama City, Kawasaki City, Sagami-hara City, Niigata City, Shizuoka City, Hamamatsu City, Nagoya City, Kyoto City, Osaka City, Sakai City, Kobe City, Okayama City, Hiroshima City, Kitakyushu City, Fukuoka City, and Kumamoto City).

\*<sup>4</sup> Semi-underground mall: A combination of an underground passage and shops established in the basement of a building that stand in a row facing this underground passage.



protection management<sup>\*6</sup> that include stipulations on firefighting, reporting, and holding disaster drills.

As of March 31, 2019, the number of fire prevention properties that were legally required to establish fire protection management structures and appoint fire protection managers came to 1,074,294 nationwide. Of these, 881,000 properties, which corresponds to 82.0%, have appointed fire protection managers and have notified firefighting agencies to this effect.

Additionally, the number of fire prevention properties where the fire protection manager has prepared firefighting plans for fire protection management in order to carry out the proper fire protection management operations for their own offices and so forth and notified firefighting agencies to this effect came to 825,194, for 76.8% of the total. (Attachment 1-1-40 untranslated)

## (2) Supervisors of Fire Protection Management

For properties like high-rise buildings (buildings that are taller than 31m high), underground malls, semi-underground malls, and other specified properties under fire prevention at or above a certain size<sup>\*7</sup> where management authority has been divided up, the Fire Service Act stipulates that fire protection managers are to be appointed and carry out fire protection management for each of the various areas which they have management authority over. Conversely, it also states that supervisors of fire protection management are to be appointed in consultation with them in order to carry out fire protection management for the building as a whole in an integrated manner. It mandates that the management officials strive to prevent fires and maintain the safety of the fire prevention properties as a whole by preparing firefighting plans for fire protection management for said properties on the whole, as well as extinguishing fires, issuing reports, and holding evacuation drills.

As of March 31, 2019, the number of fire prevention properties that were required to appoint supervisors of fire protection management came to 89,258 nationwide. Of these, 54,423, which corresponds to 61.0%, have appointed supervisors of fire protection management and notified firefighting agencies to this effect. What is more, the number of fire prevention properties that have prepared overall fire prevention plans for the sake of carrying out fire protection management for the building as a whole in an integrated manner and that have notified firefighting agencies to this effect came to 52,064, which is 58.3% of the total. (Attachment 1-1-41 untranslated)

## (3) Periodic Inspection and Reporting System for Fire Prevention Properties

To prevent fires from occurring and mitigate the damage they do, it is important for not only firefighting agencies but also personnel from the fire prevention properties,

to perform maintenance for fire prevention with said properties and strive to comply with fire prevention laws and ordinances.

Therefore, the Fire Service Act mandates that management officials at fire prevention properties with certain purposes or structures or the like have people with expert knowledge when it comes to fire prevention (hereafter referred to as “qualified inspectors of fire prevention properties”) perform inspections and report the results of these to firefighting agencies once a year.

These qualified inspectors of fire prevention properties consist of people with a certain level of knowledge of fire prevention, such as fire protection equipment engineers<sup>\*8</sup> with three or more years of practical experience with construction work for fire protection equipment etc., or people with three or more years of practical experience as fire protection managers. They must also complete a training course offered by a corporation that has been registered by the Minister of Internal Affairs and Communications, and have been issued a certificate attesting that they have acquired the necessary knowledge and skills when it comes to inspections for fire prevention properties.

As of March 31, 2019, the number of such inspectors came to 31,849.

Those fire prevention properties for which periodic inspection reports have been mandated and which have been carrying out management for three or more years continuously are exempt from the duty to perform three-year inspections and reports if they meet a certain criterion. This criterion is that they have been acknowledged as having excellent compliance with the standards from fire prevention laws and ordinances as a result of inspections carried out by a firefighting agency on the basis of an application from the management officials from said property under fire prevention measures.

Fire prevention properties that have been acknowledged as being in compliance with the inspection standards by the inspectors for these properties may display a “Fire Prevention Standard Inspection Certificate of Completion.” Those that have been acknowledged as having excellent compliance with the standards in fire prevention laws and ordinances by firefighting agencies may display a “Fire Prevention Certificate of Excellence.”

## 4. Disaster Prevention Management System

### (1) Disaster Protection Managers

In order to handle imminent threats such as major earthquakes, the Fire Service Act mandates that those people with authority for the management of large-scale and high-rise buildings and the like (hereafter referred to as “management officials”) are to prepare firefighting

<sup>\*5</sup> Fire protection managers: People who have been appointed from among those management officials who have certain qualifications, such as having completed a training course on fire protection management for fire prevention properties, and who are in a managerial or supervisory position where they can appropriately carry out the operations necessary for fire protection management at said properties.

<sup>\*6</sup> Firefighting plans for fire protection management: These are plans that establish matters which are necessary for fire protection management. Said plans are prepared by fire protection managers, with fire protection management operations carried out on the basis of said plans.

<sup>\*7</sup> Specified properties under fire prevention measures: Certain properties under fire prevention measures that include department stores, restaurants, and other properties that can accommodate large numbers of people, as well as hospitals, nursing homes for the elderly, kindergartens, and other properties used by people who would require assistance during a disaster.

<sup>\*8</sup> Fire protection equipment engineer: A person with expert knowledge of fire protection equipment etc. who has been issued a fire protection equipment engineer certification.

plans for disaster protection management<sup>\*9</sup> suited to earthquake and other disasters, appoint disaster protection managers<sup>\*10</sup> responsible for emergency response structures concerning significant damage when earthquakes strike and for holding evacuation drills and establish fire defense organizations for self-protection<sup>\*11</sup> to carry out the necessary operations in order to mitigate the damage from fires and other disasters.

As of March 31, 2019, the number of properties under disaster prevention measures that were legally required to establish disaster protection management systems and appoint disaster protection managers came to 10,037 throughout Japan. Of these, 8,588, which corresponds to 85.6%, have appointed disaster protection managers and notified firefighting agencies to this effect.

What is more, the number of properties under disaster prevention measures at which the disaster protection manager has prepared firefighting plans for disaster protection management, in order to carry out the appropriate disaster protection management operations at their own offices and other establishments, and notified firefighting agencies to this effect came to 8,058, or 80.3% of the total. The number of said properties that have established fire defense organizations for self-protection came to 8,870, or 88.4% of the total. (Attachment 1-1-42 untranslated)

## (2) Supervisors of Disaster Protection Management

For those buildings that require disaster protection management where management authority has been divided up, the Fire Service Act stipulates that disaster protection managers are to be appointed and carry out disaster protection management for each of the various areas which they have management authority over. Conversely, it also stipulates that supervisors of disaster protection management are to be appointed in consultation with them in order to carry out disaster protection management for the building as a whole in an integrated manner. It mandates that the management officials establish fire and disaster safety for the disaster prevention properties as a whole.

As of March 31, 2019, the number of fire prevention properties that were required to appoint supervisors of disaster protection management came to 2,999 nationwide. Of these, 2,700, which corresponds to 90.0%, have appointed supervisors of disaster protection management and notified firefighting agencies to this effect. What is more, the number of disaster prevention properties that have prepared firefighting plans for the sake of carrying out disaster protection management for the building as a whole in an integrated manner and that have notified firefighting agencies to this effect, came to 2,601, which is 86.7% of the total. (Attachment 1-1-43 untranslated)

## 5. Onsite Inspections and Corrections of Violations

### (1) Current Status for Onsite Inspections and Corrections of Violations

Firefighting agencies enter fire prevention properties to perform onsite inspections pursuant to the regulations of Article 4 of the Fire Service Act when it is necessary to do so for the sake of fire prevention.

The number of times onsite inspections were carried out by firefighting agencies throughout Japan in FY2018 came to 862,630. (Attachment 1-1-44 untranslated)

Fire chiefs or fire station chiefs may order measures that must be taken with respect to deficiencies in fire protection management at the fire prevention properties, fire protection equipment etc. that has not been installed at such properties, or other problems brought to light through the onsite inspections. Such measures include appointing fire protection managers and installing fire protection equipment etc. or special fire protection equipment etc., pursuant to the regulations in Article 8, Article 8-2, or Article 17-4 of the Fire Service Act. In cases where this is recognized as posing a hazard for fire prevention, they can order that the necessary measures be taken, such as repairing or relocating the fire prevention properties in question or removing the hazards from them, or else question or removing the hazards from them, or else prohibiting or restricting their use, pursuant to the regulations in Article 5, Article 5-2, or Article 5-3 of the Fire Service Act. The act states that they must publicly announce when they issue orders such as these.

In cases where violations of fire prevention laws or ordinances are discovered as a result of these onsite inspections, the fire chief or fire station chief works to redress these violations to bring them back into legal compliance, such as by issuing warnings or other remedial instructions, orders, and so on. (Attachment 1-1-45, 46, 47, 48 untranslated)

Particularly for specified violating properties (this refers to specified fire prevention properties with a floor area of 1,500m<sup>2</sup> or more or unspecified fire prevention properties with 11 or more floors, excluding the basement, where sprinkler systems, indoor fire hydrants, or fire alarm systems have not been installed in a majority of the sections where such equipment must be installed), strict guidance is imposed based on the severity of the violation, such as those that pose a significant hazard to human life in the event that a fire should break out.

As of March 31, 2019, there were 189 specified violating properties, and so therefore it is necessary to continue working to thoroughly correct these violations in a focused manner. (Table 1-1-17)

### (2) Fire Safety Certification Mark

This new labeling system, which fire departments throughout Japan were notified of in October 2013,

<sup>\*9</sup> Firefighting plans for disaster protection management: These are plans that establish matters which are necessary for disaster protection management.

<sup>\*10</sup> Disaster protection managers: People who have been appointed from among those management officials who have certain qualifications, such as having completed a training course on disaster protection management, and who are in a managerial or supervisory position where they can appropriately carry out the operations necessary for disaster protection management at disaster prevention properties.

<sup>\*11</sup> Fire defense organizations for self-protection: These are personal organizations comprised of people like employees at properties under fire prevention measures. They carry out the operations necessary in order to mitigate the damage from fires and other disasters when they occur based on the roles established in the firefighting plan.

**Table 1-1-17 Trends in the improvement status of specified violating properties**

Category By FY	No. of violating properties at the start of the FY (a)	No. of properties that corrected their violations during the FY (b)	Correction rate (%) (c=b/ax100)
FY2009	301	63	20.9%
FY2010	299	69	23.1%
FY2011	389	37	9.5%
FY2012	179	46	25.7%
FY2013	230	54	23.5%
FY2014	249	56	22.5%
FY2015	331	100	30.2%
FY2016	359	125	34.8%
FY2017	392	151	38.5%
FY2018	240	96	39.6%
FY2019	189	—	—

- (Notes) 1 Prepared based on “The Survey on the Actual Conditions of Fire Prevention Properties”.  
 2 “No. of violating properties at the start of the FY” is the sum of properties that remained in violation from two fiscal years before and violating properties that newly became aware they were in violation during the previous fiscal year at the end of the previous fiscal year for each fiscal year (as of March 31).  
 3 “No. of properties that corrected their violations during the FY” is the number of properties that corrected their violation during the fiscal year (it does not include those that newly became aware of their violation or that were abandoned).

**Table 1-1-18 Process status for fire consent**

(Cases)

Gist of application Breakdown	Consent		Dissent		Total	
	FY2017	FY2018	FY2017	FY2018	FY2017	FY2018
New construction	219,947	213,645	15	10	219,962	213,655
Extension	19,254	18,533	6	5	19,260	18,538
Reconstruction	653	665	0	0	653	665
Relocation	138	101	0	0	138	101
Repair	130	132	0	0	130	132
Remodeling	126	110	0	0	126	110
Change of classification	4,094	3,975	4	3	4,098	3,978
Other	3,074	2,690	2	1	3,076	2,691
Total	247,416	239,851	27	19	247,443	239,870

(Note) Prepared based on “The Survey on the Actual Conditions of Fire Prevention Properties”

provides users with information on a building’s compliance with laws and ordinances related to fire prevention and construction. Applications began being tendered and received on April 1, 2014, and hotels, Japanese-style hotels, and other facilities began sequentially putting the silver display marks out on display starting from August 1, 2014.

In addition, those hotels and other facilities that have been issued silver display marks for three years in a row and which meet the standards related to laws and ordinances on fire protection and construction are allowed to display a gold display mark.

Visitors to the FDMA’s website can check to confirm hotels that have been issued the Fire Safety Certification Mark throughout Japan (reference URL: [https://www.fdma.go.jp/relocation/kasai\\_yobo/hyoujiseido/](https://www.fdma.go.jp/relocation/kasai_yobo/hyoujiseido/)).

### (3) Initiation of a System for Publicly Announcing Violating Properties

The System for Publicly Announcing Violating Properties, which came about through a notification from December 2013, is a system for announcing the details of legal violations on the websites of municipal governments based on the ordinances of said municipalities. This is aimed at specified properties under fire prevention measures that have not yet installed sprinkler systems,

indoor fire hydrants, or fire alarm system, despite being obligated to do so. This announcement system was initiated in all ordinance-designated cities starting from April 2015.

What is more, fire departments overseeing populations of 200,000 people or more are started utilizing this public announcement system starting from April 2018, and those of less than 200,000 people have also started it sequentially.

Information on things like the implementation status of the public announcement system and its scheduled implementation period for municipalities throughout Japan can be confirmed via the FDMA’s website (reference URL: <https://www.fdma.go.jp/relocation/publication/>).

## 6. Fire Protection Equipment etc.

### (1) Current Status of Fire Prevention Consent

Fire prevention consent is a system that was established with the goal of boosting the safety of buildings by having personnel from firefighting agencies get involved in fire prevention for buildings starting from the design stage in their capacity as experts on fire prevention.

When it comes to the operation of this system, the firefighting agencies offer finely-detailed examinations and instructions based on legal regulations related to

building fire prevention from the perspective of fire prevention safety and firefighting activities. They also work to enhance structures and strengthen cooperation for ensuring that this work is handled promptly.

The number of cases processed regarding fire prevention consent work throughout Japan in FY2018 came to 239,870, with only 19 of these failing to receive consent. (Table 1-1-18)

## (2) Current Status for the Installation of Fire Protection Equipment etc.

The Fire Service Act states that the relevant personnel from fire prevention properties must install and properly maintain the necessary fire protection equipment etc.

according to the purpose, size, structure, and capacity of the property in question.

A look at the installation status for primary fire protection equipment etc. in specified fire prevention properties throughout Japan reveals that, as of March 31, 2019, the installation rate for sprinkler systems (number installed/number that needs to be installed) was 99.7%, while that for automatic fire alarms was 99.1%. (Table 1-1-19)

With respect to the technical standards pertaining to fire protection equipment etc., regulations are being successively set in place in accordance with technological progress and societal demands. In recent years, a fire occurred at a medical clinic in Fukuoka City, Fukuoka

**Table 1-1-19 Installation status for sprinkler systems and fire alarm systems at specified properties under fire prevention measures throughout Japan**

(As of March 31, 2019)

Classification of properties under fire prevention measures			Equipment type	Number of Sprinkler systems				Number of Automatic fire alarm systems				
			Equipment condition	Needs to be installed	Installed	Violations	Installation rate (%)	Needs to be installed	Installed	Violations	Installation rate (%)	
(1)	a	Theaters, etc.		786	786	0	100.0	3,747	3,736	11	99.7	
	b	Public halls, etc.		540	537	3	99.4	31,262	31,216	46	99.9	
(2)	a	Cabarets, etc.		4	4	0	100.0	457	447	10	97.8	
	b	Game centers, etc.		711	705	6	99.2	9,017	8,992	25	99.7	
	c	Stores engaged in sex-related businesses, etc.		0	0	0	—	165	163	2	98.8	
	d	Karaoke box and stores, etc.		10	10	0	100.0	2,630	2,613	17	99.4	
(3)	a	Restaurants, etc.		2	2	0	100.0	1,973	1,945	28	98.6	
	b	Eating and drinking houses		121	121	0	100.0	34,976	34,630	346	99.0	
(4)	Department stores, etc.			7,572	7,542	30	99.6	86,586	86,137	449	99.5	
(5)	a	Hotels, etc.		2,244	2,234	10	99.6	67,555	66,134	1,421	97.9	
(6)	a	(1)	Hospitals that they need patient assistance for evacuation		3,766	3,749	17	99.5	6,128	6,118	10	99.8
		(2)	Clinics with 19 beds or less that they need patient assistance for evacuation		1,269	1,266	3	99.8	3,032	3,027	5	99.8
		(3)	Hospitals(not including those listed in (1)), Clinics with 19 beds or less(not including those listed in (2)) and Birth center with bed		3,568	3,564	4	99.9	9,229	9,224	5	99.9
		(4)	Clinics with no in-patient capacity, Birth center without bed		191	191	0	100.0	20,995	20,953	42	99.8
		Subtotal			8,794	8,770	24	99.7	39,384	39,322	62	99.8
	b	(1)	Short-term welfare facilities for the elderly		40,398	40,329	69	99.8	42,693	42,656	37	99.9
		(2)	Shelters		204	203	1	99.5	231	231	0	100.0
		(3)	Nurseries		122	119	3	97.5	150	148	2	98.7
		(4)	Welfare facilities for disabled children		422	421	1	99.8	485	484	1	99.8
		(5)	Support facilities for the disabled		6,072	6,049	23	99.6	7,033	7,019	14	99.8
	Subtotal			47,218	47,121	97	99.8	50,592	50,538	54	99.9	
	c	(1)	Elderly daycare centers, etc.		1,384	1,379	5	99.6	15,201	15,154	47	99.7
		(2)	Rehabilitation facilities		52	21	31	40.4	212	212	0	100.0
		(3)	Nursery schools, etc.		115	111	4	96.5	29,721	29,710	11	100.0
		(4)	Child development support centers, etc.		42	42	0	100.0	1,428	1,426	2	99.9
		(5)	Welfare centers for disabled persons, etc.		612	610	2	99.7	15,966	15,884	82	99.5
	Subtotal			2,205	2,163	42	98.1	62,528	62,386	142	99.8	
	d	Kindergartens, etc.			216	216	0	100.0	14,616	14,610	6	100.0
(9)	a	Special bathhouses		19	19	0	100.0	1,371	1,368	3	99.8	
(16)	a	Specified multipurpose fire prevention properties		20,038	19,981	57	99.7	204,950	202,171	2,779	98.6	
(16-2)	Underground malls			59	59	0	100.0	61	61	0	100.0	
(16-3)	Semi-Underground malls			4	4	0	100.0	7	7	0	100.0	
Total				90,543	90,274	269	99.7	611,877	606,476	5,401	99.1	

(Notes) 1 Prepared based on "The Survey on the Actual Conditions of Fire Prevention Properties".

2 For the installation rate, the digits in the second decimal place were rounded off.



Prefecture in October 2013 (which left ten people dead and five injured). In light of this, it was mandated that Clinics with 19 beds or less/Hospitals that they need patient assistance for evacuation must install sprinkler systems as a general rule, regardless of their floor area. The installation of these sprinkler systems has been in force since April 1, 2016 as a result of the Partial Revision of the Order for Enforcement of the Fire Service Act and other legislation (promulgated on October 16, 2014). At the time of enforcement, transitional measures that equipment should be installed by June 30, 2025 were set for existing facilities.

Moreover, large urban area fire occurred in Itoigawa City, Niigata Prefecture in December 2016 (which left 30,213.45m<sup>2</sup> burned floor area). In light of this, it was mandated that restaurants with equipment or appliances that use fire must install fire extinguishing equipment as a general rule, regardless of their floor area. The installation of these has been carried out since October 1, 2019 as a result of the Partial Revision of the Order for Enforcement of the Fire Service Act and other legislation (promulgated on March 28, 2018).

Regarding properties that violate the Fire Service Act, such as violation of the obligation to install fire protection equipment, etc., the government will proactively issue Administrative Order and other measures based on the Fire Service Act and proceed prompt and effective violations correction operation.

### (3) Fire Protection Equipment Engineers and Fire Protection Equipment Inspectors

Efforts are made to ensure the performance of fire protection equipment etc. via inspection system for fire protection machinery and tools. However, if there are deficiencies or defects at the installation stage, then such equipment will be rendered incapable of performing properly when a fire does occur. To prevent such circumstances, the installation and maintenance of certain fire protection equipment etc. can only be performed by fire protection equipment engineers.

What is more, fire protection equipment etc. must be properly maintained on a daily basis to ensure that it is capable of performing at any and all times. As a result, it has been mandated that periodic inspections be performed and the results of these be reported. These inspections premised on maintaining the equipment require knowledge and skills with regards to the fire protection equipment etc. Therefore, the relevant personnel from the fire prevention properties must have fire protection equipment engineers or fire protection equipment inspectors (people who have completed certain training courses offered by corporations that have been registered by the Commissioner of the FDMA and been issued a fire protection equipment inspector certificate) perform the inspections on the fire protection equipment etc.

Efforts are made to improve the quality of these fire protection equipment engineers and fire protection equipment inspectors by mandating that they undergo re-training at certain fixed intervals after they have received their license in order for them to acquire new knowledge and skills concerning the fire protection equipment etc. Moreover, these people will be ordered to return their license or face a similar punishment in the event that they violate any of the fire prevention laws or ordinances.

As of March 31, 2019, the total number of fire protection

equipment engineers came to 1,201,667 (**Attachment 1-1-49** untranslated). In addition, the number of fire protection equipment inspectors came to 713 special inspectors (for special fire protection equipment etc.), 158,124 Class 1 inspectors (for mechanical systems) and 149,195 Class 2 inspectors (for electrical systems).

Programs for displaying that inspections have been performed, in which inspection certificates of completion verifying that inspections of fire protection equipment etc. have been properly carried out are posted, have been independently instituted at the prefectural level. This is done in an effort to clarify the responsibilities for performing inspections and have the relevant personnel from fire prevention properties perform the proper inspections.

## (4) Flame Retardancy Regulations

### A. Usage Status for Flame Retardant Goods

Using goods that resist catching fire for various objects that tend to be easily flammable within buildings prevents fires from breaking out and simultaneously checks the spread of fires during their initial stages when they do occur. As such, this is extremely effective when it comes to preventing fires. Therefore, fire prevention properties that must give forethought to fire prevention due to their structural features or configuration, such as high-rise buildings and underground malls, as well as fire prevention properties like theaters, hotels, and hospitals that are used by large unspecified numbers of people and people requiring special consideration have been designated as “flame retardancy and fire prevention properties.” The Fire Service Act mandates that these properties use goods with the prescribed flame retardant performance (hereafter referred to as “flame retardant goods”) for the curtains, stage curtains, plywood display boards, carpets, and other goods used (hereafter referred to as “goods under the flame retardancy requirement”).

As of March 31, 2019, the number of flame retardancy and fire prevention properties came to 977,729. The conformance rate (share of the flame retardancy and fire prevention properties where flame retardant goods are used for all of the goods under the flame retardancy requirements at said properties) at flame retardancy and fire prevention properties using curtains and stage curtains came to 88.1%, while it was 87.7% at those using carpets, and 84.7% at those using plywood display boards. (**Table 1-1-20**)

### B. Public Awareness of Flame Retardant Goods for Bedding and Other Goods

Aside from those goods under the flame retardancy requirement stipulated in the Fire Service Act such as curtains and carpets, using fireproof goods for futons, pajamas, the body covers for automobiles and motorcycles, and more is also extremely effective for preventing fires. Therefore, the FDMA spreads public awareness of these by uploading videos detailing the effects from these flame retardant goods to its website (reference URL: [https://www.fdma.go.jp/relocation/html/life/yobou\\_contents/fire\\_retardant/](https://www.fdma.go.jp/relocation/html/life/yobou_contents/fire_retardant/)).

## (5) Regulations for Equipment and Tools that Use Fire

From the perspective of fire prevention, the location, construction, management, and handling of equipment

**Table 1-1-20 Number of flame retardancy and fire prevention properties and usage status of flame retardant goods**

(As of March 31, 2019)

Categories of flame retardancy and fire prevention properties		No. of flame retardancy and fire prevention properties	Use of curtains, stage curtains, etc.	Properties on the left using all of the goods under the flame retardancy requirement		Use of carpets	Properties on the left using all of the goods under the flame retardancy requirement		Use of plywood display boards	Properties on the left using all of the goods under the flame retardancy requirement	
					Compliance rate (%)			Compliance rate (%)			Compliance rate (%)
(1)	a Theaters, etc.	4,286	2,654	2,525	95.1	1,979	1,874	94.7	480	458	95.4
	b Public halls, etc.	63,092	42,494	38,783	91.3	25,295	22,618	89.4	4,445	3,907	87.9
(2)	a Cabarets, etc.	843	413	321	77.7	436	362	83.0	46	43	93.5
	b Game centers, etc.	9,476	4,710	4,250	90.2	4,357	4,010	92.0	669	591	88.3
	c Stores engaged in sex-related businesses, etc.	192	121	104	86.0	99	85	85.9	7	4	57.1
	d Karaoke box and stores, etc.	2,571	1,365	1,224	89.7	1,121	1,027	91.6	185	167	90.3
(3)	a Restaurants, etc.	2,703	1,682	1,434	85.3	1,548	1,341	86.6	173	137	79.2
	b Eating and drinking houses	80,588	39,924	33,150	83.0	23,815	19,984	83.9	4,268	3,663	85.8
(4)	Department stores, etc.	152,895	64,028	58,429	91.3	33,408	29,766	89.1	8,312	7,169	86.2
(5)	a Hotels, etc.	57,869	46,115	42,399	91.9	37,524	34,722	92.5	2,847	2,523	88.6
(6)	a Hospitals, etc.	60,758	44,918	42,328	94.2	24,999	23,241	93.0	4,110	3,723	90.6
	b Special elderly nursing homes, etc.	47,835	39,633	37,663	95.0	22,705	21,489	94.6	3,811	3,516	92.3
	c Elderly daycare centers, etc.	79,687	59,289	55,334	93.3	33,529	30,623	91.3	5,533	5,023	90.8
	d Kindergartens, etc.	15,981	12,478	11,649	93.4	6,492	5,972	92.0	1,070	955	89.3
(9)	a Special bathhouses	1,405	1,078	948	87.9	1,024	942	92.0	65	48	73.8
(12)	b Studios	428	175	155	88.6	132	120	90.9	83	67	80.7
(16)	a Specified multipurpose fire prevention properties	322,706	145,464	116,427	80.0	95,149	77,093	81.0	17,788	13,687	76.9
	b Unspecified multipurpose fire prevention properties	20,834	3,157	2,448	77.5	2,137	1,636	76.6	915	712	77.8
(16-2)	Underground malls	61	54	43	79.6	47	40	85.1	16	14	87.5
(16-3)	Semi-underground malls	7	6	4	66.7	5	4	80.0	1	1	100.0
	High-rise buildings	53,512	24,079	20,489	85.1	21,306	18,600	87.3	4,172	3,548	85.0
Total		977,729	533,837	470,107	88.1	337,107	295,549	87.7	58,996	49,956	84.7

(Notes) 1 Prepared based on "The Survey on the Actual Conditions of Fire Prevention Properties".

2 High-rise buildings (buildings that are taller than 31m) are not classified within Appended Table I of the Ordinance of Enforcement for the Fire Service Act. Moreover, fire prevention properties that correspond to high-rise buildings were counted in the "High-rise buildings" field within the "Classification of fire prevention properties" column.

and tools that use fire, including home gas burners, stoves, hot-water heaters, fireplaces, kitchen equipment, and sauna equipment, are regulated via the fire prevention ordinances established by each municipality. These are established pursuant to the Ministerial Ordinance Establishing Standards for Enacting Ordinances on the Location, Construction, and Management of Eligible Equipment that Uses Fire and the Handling of Eligible Tools that Use Fire.

## 7. Inspection System for Fire Protection Machinery and Tools etc.

### (1) Inspections

Fire protection machinery or tools that are subject to inspection (hereafter referred to as "machinery and tools subject to inspection") are prohibited from being sold, displayed for commercial purposes, and so forth unless they pass inspections and include a label indicating this pursuant to the regulations of Article 21-2 of the Fire Service Act.

The machinery and tools subject to inspection include the 12 items stipulated in Article 37 of the Order for Enforcement of the Fire Service Act, including fire extinguishers and enclosed sprinkler heads.

These inspections consist of "model approval" (approval indicating that the shape and other factors of the machinery and tools conform with the technical specifications established in ministerial ordinances) and "model compliance inspections" (inspections conducted to confirm that the shape and other factors of the individual machinery and tools subject to inspection are identical to the shape and so forth for models of said equipment that have received model approval). (**Attachment 1-1-50** untranslated)

Moreover, for machinery and tools subject to inspection with regard to the development of new technologies, inspections can be carried out via the technical specifications established by the Minister of Internal Affairs and Communications for those items that conform to the technical standards established by said ministerial ordinance in terms of their shape or the like, or those acknowledged as having performance that meets or exceeds this level. Through this, the aim is to enhance the inspection system so as to promote technological innovation with these machinery and tools subject to inspection.

Regarding the inspection system, it came to light that cases of misconduct occurred in October 2008, including test samples being secretly switched out during model



compliance inspections for fire hoses. Moreover, in March 2010 it was discovered that fire-extinguishing foam used in the compressed air foam apparatuses on fire trucks that had not been inspected was being sold. As part of the public service corporation program review carried out in May 2010, evaluation results were issued to the effect that reassessments were to be made with a view towards expanding both voluntary screenings and the increased involvement of the private sector when it comes to inspections. Based on this, the Act for Partial Revision of the Fire Service Act was enacted on April 1, 2013. This established collection orders via the Minister of Internal Affairs and Communications and strengthened penal provisions in cases where machinery and tools subject to inspection not in compliance with the standards or which lacked labels indicating their compliance were circulating on the market.

It also relaxed requirements in order to promote the entry of private companies into the registered inspection body market, among its other stipulations.

Moreover, the Partial Revision of the Order for the Enforcement of the Fire Service Act, which enacted on April 1, 2013, made machinery and tools subject to inspections, mainly the fire hoses and couplers used by firefighting agencies and the electric leak alarms, for which there has been declining need due to changes in the configurations of buildings, items that are subject to self-labeling. At the same time, the ordinance for Partial Revision of the ordinance of Enforcement for the Fire Service Act enacted on April 1, 2014. It also newly added residential fire alarms, which are required to be installed in all homes, to the machinery and tools subject to inspection.

## (2) Self-labeling

With the self-labeling system, it is the responsibility of the manufacturers to confirm their compliance with specifications on their own according to the regulations in Article 21-16 (3) of the Fire Service Act. The system also gives approval for labeling models that have been reported to the Minister of Internal Affairs and Communications in advance.

Machinery and tools that are subject to self-labeling (hereafter referred to as “machinery and tools subject to self-labeling”) are prohibited from being sold, displayed for commercial purposes, and so forth unless they include a label pursuant to the regulations of Article 21-16 (2) of the Fire Service Act.

Similar to machinery and tools subject to inspection, the Act for Partial Revision of the Fire Service Act, which enacted on April 1, 2013, established collection orders via the Minister of Internal Affairs and Communications and strengthened penal provisions for machinery and tools subject to self-labeling not in compliance with the standards or which lacked labels indicating their compliance.

Items that fall under the category of machinery and tools subject to self-labeling include power fire pumps and fire suction hoses. Furthermore, as a result of the Partial Revision of the Order for Enforcement of the Fire Service Act and other legislation, which enacted on April 1, 2014, the fire hoses, couplers, and electric leak alarms that had previously been counted as machinery and tools subject to inspection, as well as the disposable aerosol fire extinguishers that are generally in widespread circulation

but which frequently suffer from rupture accidents and the like, were newly added to this category.

The number of reports from manufacturers in FY2018 came to 23 for power fire pumps, 50 for fire hoses, 0 for fire suction hose, 4 for couplers, 0 for disposable aerosol fire extinguishers, and 0 for electric leak alarms.

## 8. Performance Inspections of Technical Standard for Fire Protection Equipment etc.

When it comes to the technical standards for fire protection equipment etc., oftentimes details like materials or dimensions are prescribed in specification documents or the like. This makes it difficult for new technologies to gain acceptance, even when they offer satisfactory performance. Therefore, technical development for the fields of fire and other disaster prevention is promoted and performance regulations are adopted to ensure that even more effective fire prevention and safety measures can be established.

The basic philosophy behind this is to judge whether equipment offers performance that is at or above the level of performance of the installed fire protection equipment etc. based on the conventional technical standards. Equipment that has been confirmed to be at or above the conventional performance level is approved for installation in place of the existing fire protection equipment etc.

The performance demanded of fire protection equipment etc. is divided up into three categories. These are “initial spread inhibition performance,” which is performance for inhibiting the spread of fires during the initial stages, “evacuation safety support performance,” which is performance that supports safely evacuating during fires, and “firefighting activity support performance,” which is performance that supports the activities of firefighting teams.

A certain body of knowledge has been gained regarding these, on which their equivalence is evaluated via objective verification methods (methods of objectively and impartially verifying newly developed technologies and technical innovations) and so forth.

At the same time, a certification system via the Minister of Internal Affairs and Communications has been established aimed at equipment for which evaluations of its equivalence cannot be performed solely through the existing objective verification methods (such as special fire protection equipment etc.). Under this system, applications are made for each property under fire prevention measures regarding special fire protection equipment etc. for which general inspection standards have not have established. The Minister of Internal Affairs and Communications will then perform an examination based on the evaluation results from a performance evaluation agency (the Japan Fire Equipment Inspection Institute or a registered inspection body), and equipment that has been acknowledged as having the necessary level of performance can be installed. As of March 31, 2019, 68 cases have received certification thus far as special fire protection equipment etc. (**Attachment 1-1-51** untranslated)

The expectation is that, by applying these regulations, new equipment that uses new technologies will be proactively developed and disseminated.

**Table 1-1-21 Investigations into the causes of fires by the Commissioner of the FDMA that were recently conducted and responses based on the results of these**

No.	Date of fire	Location	Building purpose, etc.	Responses by FDMA
1	May 13, 2012	Fukuyama City, Hiroshima Prefecture	Hotel (10 casualties)	Revised the Order for Enforcement of the Fire Service Act and other legislation, and strengthened installation standards for automatic fire alarms. Also restructured and began applying a labeling system that provides users with information on that conform to the fire prevention standards in fire prevention laws and ordinances.
2	February 8, 2013	Nagasaki City, Nagasaki Prefecture	Group home (12 casualties)	Revised the Order for Enforcement of the Fire Service Act and other legislation. Strengthened installation standards for sprinkler systems and mandated that automatic fire alarms and fire notification alarms be interlinked.
3	August 15, 2013	Fukuchiyama City, Kyoto Prefecture	Fireworks festival (59 casualties)	Revised the Order for Enforcement of the Fire Service Act and the Fire Prevention Ordinance (Example). Mandated the submission of plans related to operations necessary for fire prevention at outdoor event venue at or above a certain size, and mandated that fire extinguishers be prepared.
4	October 11, 2013	Fukuoka City, Fukuoka Prefecture	Medical clinic (15 casualties)	Revised the Order for Enforcement of the Fire Service Act and other legislation. Reassessed the installation standards for fire extinguishing equipment, indoor fire hydrants, sprinkler systems, power fire pump equipment, and fire alarms that notify firefighting agencies.

## 9. Current Status of Investigations into the Causes of Fires

Advances in science and technology have brought about increasing sophistication for industry and changes in social conditions. This has resulted in a tendency for fires that are large in scale and which assume aspects of complexity to occur with great frequency, and so investigating the causes behind these requires sophisticated expertise. What is more, investigating the causes of fires and illuminating the extent of the damage caused by both fires and firefighting are crucial when it comes to examining modalities for subsequent fire prevention administration.

Investigating the causes of fires is unequivocally the role of local governments, but it is the duty of the national government to complement them in this.

In cases where there has been a request from a firefighting agency, or the Commissioner of the FDMA has deemed that there is a particular necessity in doing so, an investigation into the causes of a fire can be carried out by the Commissioner of the FDMA.

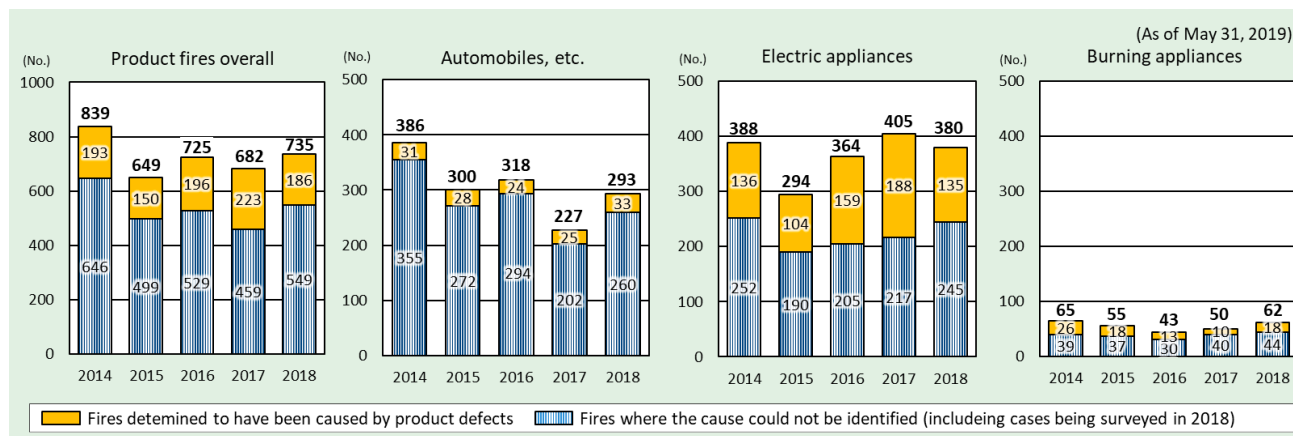
Investigation teams formed from personnel from the FDMA according to the type of fire carry out the investigations into the causes of the fire through this system in coordination with firefighting agencies. Reviews

are conducted based on the knowledge and data obtained from the investigations, and this is reflected in policies for fire defense administration. Cases where responses such as revising fire prevention laws and ordinances were carried out based on the results of investigations into the causes of fires by the Commissioner of the FDMA that were carried out recently are shown in Table 1-1-21.

In an effort to improve the effectiveness of investigations into the causes of fires regarding product fires, the Act for Partial Revision of the Fire Service Act (Law No. 38 from 2012) enacted on April 1, 2013, which granted firefighting agencies the right to issue an order to submit materials to manufacturers and importers and the right to collect information from them.

## 10. Promoting Countermeasures to Product Fires

In recent years, as the causes of fires has grown extremely diverse, the products close to the general public in their daily lives have begun causing fires as well, including automobiles and other vehicles, electronic appliances, and burning appliances. Given the strong demands to ensure consumer safety and peace of mind, the FDMA has been strengthening its initiatives to combat

**Fig. 1-1-19 Trends in the survey results on product fires over the past five years**

(Note) See the FDMA website for details (URL : <https://www.fdma.go.jp/mission/prevention/cause/34530.html>).

these product fires.

For such fires, the FDMA has established a structure whereby it collects fire information from firefighting agencies in a comprehensive manner and aggregates the number of fires for each type of product which serve as the ignition source. It then provides the public with warnings and alerts quickly and effectively by announcing information like the names of faulty products and their manufacturers every quarter.

Fires that firefighting agencies deemed to have been caused by defects in automobiles and other vehicles, as well as electronic appliances and burning appliances, that occurred in FY2018 were aggregated. From this, it was discovered that of the total of 735 product fires, 186 were fires deemed to have been caused by product defects, 454 were fires that could not be determined to have occurred from a defect in a specified product as the direct cause although the cause was identified, and 95 were fires that are still currently under investigation. (Fig. 1-1-19)

The results of these investigations are reported to firefighting agencies throughout Japan. Furthermore, the

collected fire information is shared between the Consumer Affairs Agency, the Ministry of Economy, Trade and Industry, the Ministry of Land, Infrastructure, Transport and Tourism, and the National Institute of Technology and Evaluation (NITE), which work together to promote countermeasures to product fires.

What is more, with respect to investigations into the causes of fires carried out by firefighting agencies throughout Japan, efforts are also being made to improve the investigation skills of the firefighting agencies. Examples of this include providing them with technical support such as scientific investigation based on the expert knowledge and equipment and materials of the National Research Institute of Fire and Disaster and so forth. In addition to working to enhance investigations into the causes of fires and the structures for this, the FDMA also strives to proactively collect information on product fires and strengthen collaborations with the relevant agencies. Through this, it is moving forward with ensuring consumer safety and peace of mind, while also preventing fire accidents caused by products.

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# Section 2 Countermeasures to Disasters at Facilities for Hazardous Materials

📖 Japanese Original P.99

## Current Status and Recent Trends in Disasters at Facilities for Hazardous Materials

Accidents at facilities for hazardous materials\*<sup>1</sup> are broadly classified into fires (including explosions) and spills of hazardous materials\*<sup>2</sup>. The number of fire and spillage accidents at facilities for hazardous materials have been trending upward since 1994. In FY2018, there were 206 fires and 403 spills for a total of 609 accidents. This represents an increase of 45 accidents compared with the previous year. This number is the highest ever. (Fig. 1-2-1)

### 1. Fire Accidents

The number of fire accidents that occurred at facilities for hazardous materials in 2018 was 206. This rose by roughly 1.9-times compared with the 107 such accidents in 1993, which had the lowest number of fire accidents

since 1989, despite the fact that the number of facilities for hazardous materials has decreased. Accidents attributable to human factors such as inadequate maintenance and inadequate operating checks account for the majority of the primary causes for these.

### (1) Number of Fire Accidents at Facilities for Hazardous Materials and the Damage

The number of fire accidents that occurred at facilities for hazardous materials in 2018 came to 206 (11 more than the previous year), the amount of damages came to 2,419 million yen (a decrease of 249 million yen year-on-year), and they resulted in 2 deaths (the same as the previous year) and 120 people injured (an increase of 69 people year-on-year). (Fig. 1-2-2)

Moreover, looking at the number of fire accidents that occurred by type of facility for hazardous materials reveals that the majority occurred at general outlets, followed by manufacturing facilities and fuel supply depots in that order. The total for these 3 facility classifications account for 93.7% of the total accidents. (Fig. 1-2-3)

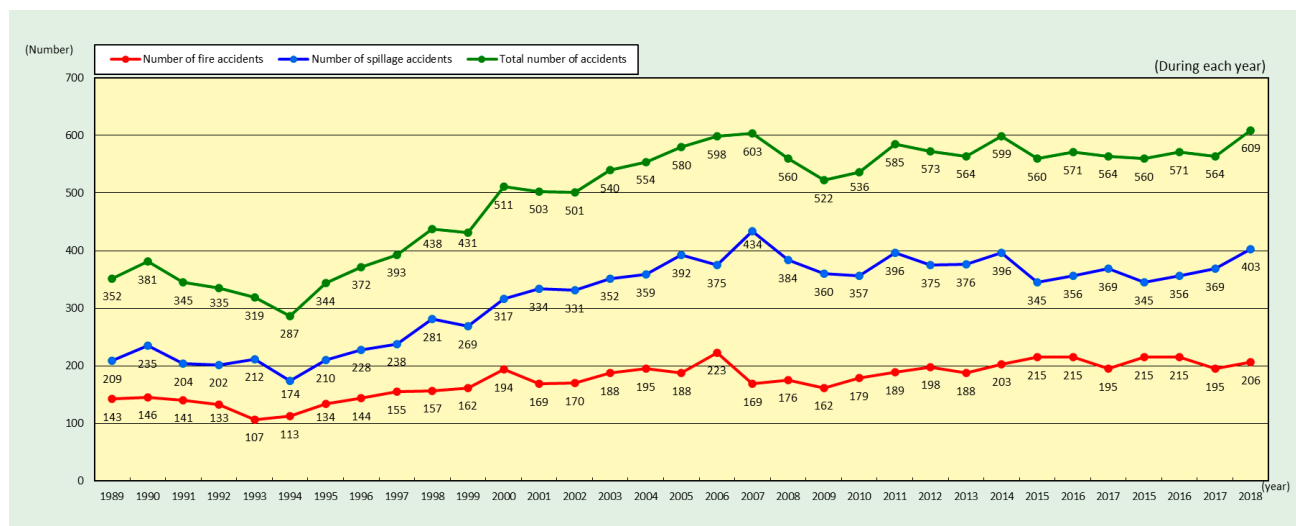
\*<sup>1</sup> **Facilities for hazardous materials:** These are facilities that have received authorization from municipal mayors and similar officials as facilities that store or handle hazardous materials at or above the quantities specified in the Fire Service Act. As described below, they are classified into three types: manufacturing facilities, storage facilities, and handling facilities

Classification		Details
Manufacturing facilities		Facilities that manufacture hazardous materials (Ex.: Chemical plants, oil refineries)
Storage facilities	Indoor storage facilities	Store hazardous materials inside buildings
	Outdoor storage tanks	Store hazardous materials in tanks located outdoors (Ex.: oil tanks)
	Indoor storage tanks	Store hazardous materials in tanks located indoors
	Underground storage tanks	Store hazardous materials in tanks located below the ground's surface
	Simple storage tanks	Stores hazardous materials in small tanks less than 600 L
	Transfer storage tanks	Store hazardous materials in tanks that have been affixed to vehicles (Ex.: Tanker trucks)
Handling facilities	Outdoor storage facilities	Store certain hazardous materials in containers in outdoor locations
	Fuel supply depots	Handling facilities that fuel vehicles and the like (Ex.: Gas stations)
	Sales handling facilities	Stores that sell containers full of hazardous materials
	Transfer handling facilities	Handling facilities that transfer hazardous materials through pipes (Ex.: Pipelines)
General outlets		Handling facilities other than the three types of handling facilities above (Ex.: Boilers, private power generators)

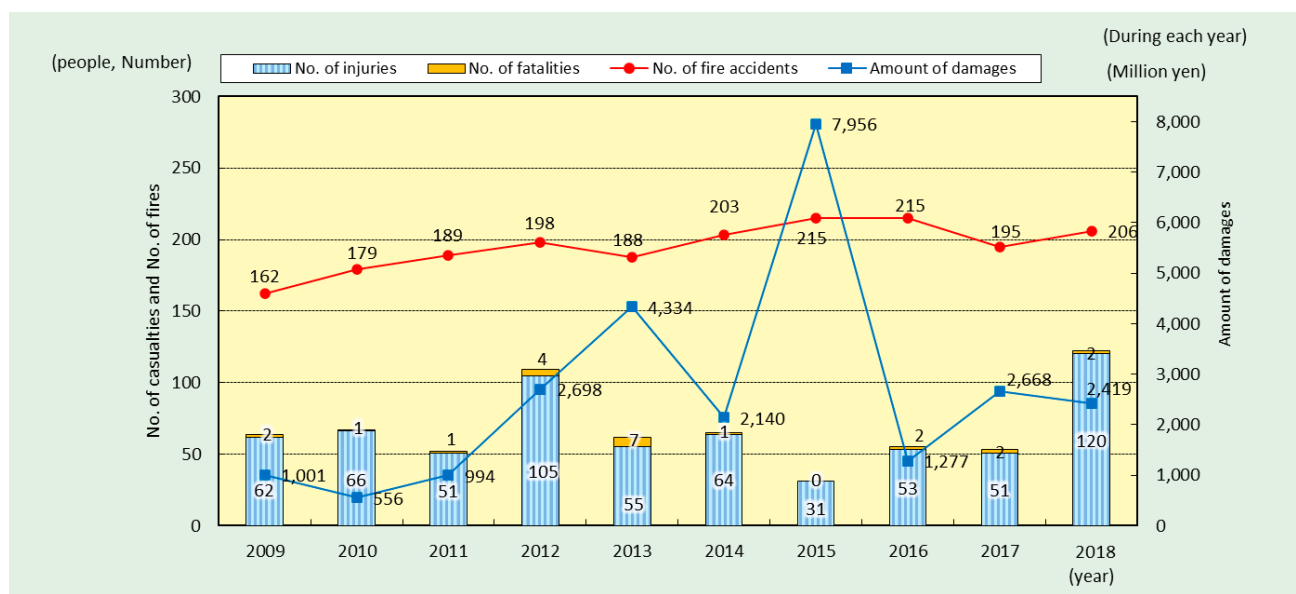
\*<sup>2</sup> **Hazardous materials:** The Fire Service Act (Article 2-7) defines them as such: "The term 'hazardous materials' means the materials listed in the Names of Items column of Appended Table 1, which have the properties listed in the Nature column of said table according to the Categories specified in said table." Moreover, the properties of each hazardous material are defined for each type in the "Remarks" to Appended Table I of the Fire Service Act.

[Hazardous materials listed in Appended Table I and their characteristics]

Category	Nature	Properties	Representative substances
Category 1	Oxidizing solids	These are solids that do not burn themselves, but which have the property of causing other substances to oxidize powerfully. When mixed with inflammable materials, they degrade as a result of heat, impacts, or friction, and give rise to extremely intense combustion.	Sodium chlorate, potassium nitrate, ammonium nitrate
Category 2	Combustible solids	These are solids that easily ignite from fire or solids that easily catch fire at relatively low temperatures (less than 40°C). They easily catch fire, are quick to combust, and are difficult to extinguish.	Red phosphorous, sulfur, iron powder, solid alcohol, lacquer putty
Category 3	Spontaneously combustible substances and water-reactive substances	These substances spontaneously combust when exposed to air, or either combust or generate combustible gasses when they come into contact with water.	Sodium, alkyl aluminum, yellow phosphorous
Category 4	Inflammable liquids	These are liquids that are inflammable.	Gasoline, kerosene, light oil, heavy oil, acetone, methanol
Category 5	Self-reactive substances	These are solids or liquids that generate large quantities of heat at relatively low temperatures or promote explosive reactions as a result of thermolysis and other reactions.	Nitroglycerin, trinitrotoluene, hydroxylamine
Category 6	Oxidizing liquids	These are liquids that do not burn themselves, but which have the property of promoting the combustion of other flammable substances they are mixed with.	Perchloric acid, hydrogen peroxide, nitric acid

**Fig. 1-2-1 Trends in the number of fire and spillage accidents at facilities for hazardous materials**

- (Notes) 1 Prepared based on “The Accident Reports on Hazardous Materials”.  
 2 In order to get a grasp of trends regarding the number of accidents that occur in each year, accidents are listed by splitting them up into the number of accidents caused by earthquakes with a seismic intensity of six-lower or greater (since September 1996 this was changed to a seismic intensity of six or greater) and the number attributable to other causes.

**Fig. 1-2-2 Number of fire accidents at facilities for hazardous materials and the damage**

- (Notes) Prepared based on “The Accident Reports on Hazardous Materials”.

Conversely, 102 of the 206 fire accidents (or 49.5% of the total) were cases where a hazardous material served as the causative agent for the fire. (Fig. 1-2-4)

## (2) Causative Factors behind the Fire Accidents at Facilities for Hazardous Materials

A look at the causative factors behind the fire accidents at facilities for hazardous materials that occurred in 2018 reveals that human factors accounted for 53.4%; physical factors accounted for 28.6%; and the total for other causes, unknown, and under investigation came to 18.0%. (Fig. 1-2-5)

When viewed by ignition source, those ignited by high-temperature surface heat was most common at 37 (an increase of 2 year-on-year), followed by 32 from static electricity sparks (an increase of 10 year-on-year) and 21

from ignition due to overheating (a decrease of 3 year-on-year). (Fig. 1-2-6)

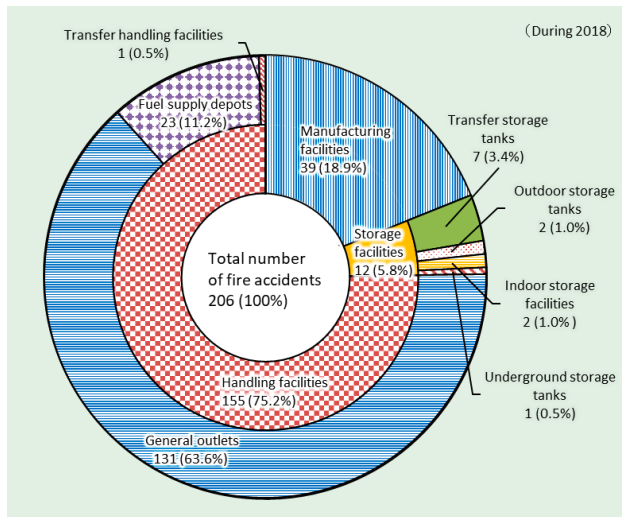
## (3) Fire Accidents at Unauthorized Facilities

The number of fire accidents that occurred at facilities which were supposed to receive authorization as facilities for hazardous materials yet which failed to do so (hereafter referred to as “unauthorized facilities”) in 2018 came to 2 (an increase of 1 year-on-year), and they left 0 people dead (the same as the previous year) and 1 injured (an increase of 1 year-on-year).

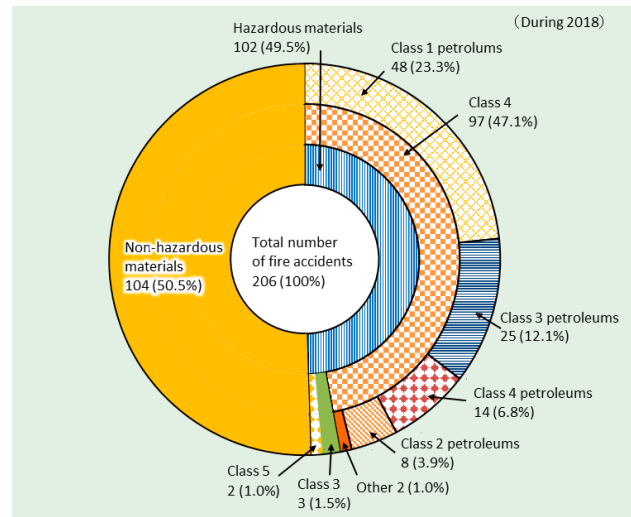
## (4) Fire Accidents during the Transportation of Hazardous Materials

In 2018, 2 fire accidents during the transportation of hazardous materials occurred (an increase of 1 year on

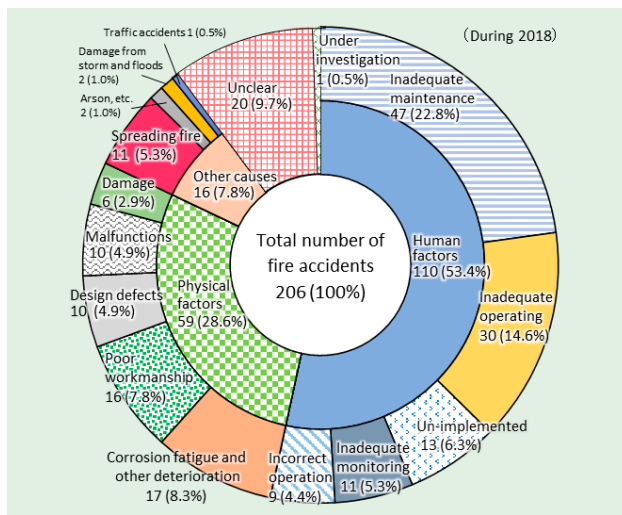


**Fig. 1-2-3** Number of fire accidents by type of facility for hazardous materials

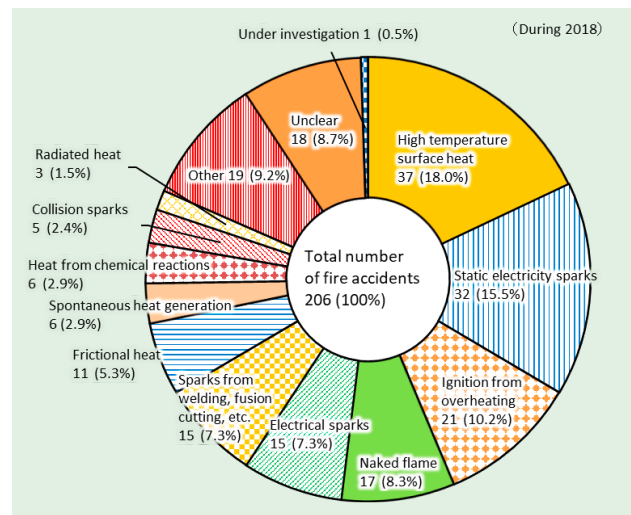
- (Notes) 1 Prepared based on "The Accident Reports on Hazardous Materials".  
 2 Digits in the second decimal place were rounded off, so in some cases the totals may not be consistent.

**Fig. 1-2-4** Number of fire accidents by causative agent for the fire

- (Notes) 1 Prepared based on "The Accident Reports on Hazardous Materials".  
 2 Digits in the second decimal place were rounded off, so in some cases the totals may not be consistent.

**Fig. 1-2-5** Number of fire accidents by causative factor

- (Notes) 1 Prepared based on "The Accident Reports on Hazardous Materials".  
 2 Digits in the second decimal place were rounded off, so in some cases the totals may not be consistent.

**Fig. 1-2-6** Number of fire accidents by ignition source

- (Notes) 1 Prepared based on "The Accident Reports on Hazardous Materials".  
 2 Digits in the second decimal place were rounded off, so in some cases the totals may not be consistent.

year), with no casualties occurring as continuation from 2017.

### (5) Fire Accidents during the Temporary Storage or Handling

In 2018, 1 fire accidents during the temporary storage or handling of hazardous materials occurred (an increase of 1 year on year) and they left 0 people dead (the same as the previous year) and 1 injured (an increase of 1 year-on-year).

## 2. Spillage Accidents

The number of spillage accidents involving hazardous materials that occurred at facilities for hazardous materials

in 2018 was 403. This rose by roughly 2.3-times compared with the 174 such accidents in 1994, which had the lowest number of spillage accidents since 1989, despite the fact that the number of facilities for hazardous materials has decreased. As for the primary causative factors, accidents attributable to human factors and those caused by physical factors both occur in large numbers. However, of those accidents caused by physical factors, the number caused by age-related deterioration, such as corrosion fatigue, are on the rise.

### (1) Number of Spillage Accidents at Facilities for Hazardous Materials and the Damage

The number of spillage accidents involving hazardous materials that occurred at facilities for hazardous materials



(which did not turn into fires) in 2018 came to 403 (an increase of 34 year-on-year), the amount of damages came to 495 million yen (an increase of 61 million yen year-on-year), and they left 0 people dead (the same as the previous year) but left 27 people injured (a decrease of 2 people year-on-year). (Fig. 1-2-7)

Moreover, looking at the number of spillage accidents that occurred by type of facility for hazardous materials reveals that the majority occurred at general outlets, followed by fuel supply depots and outdoor storage tank facilities in that order. (Fig. 1-2-8)

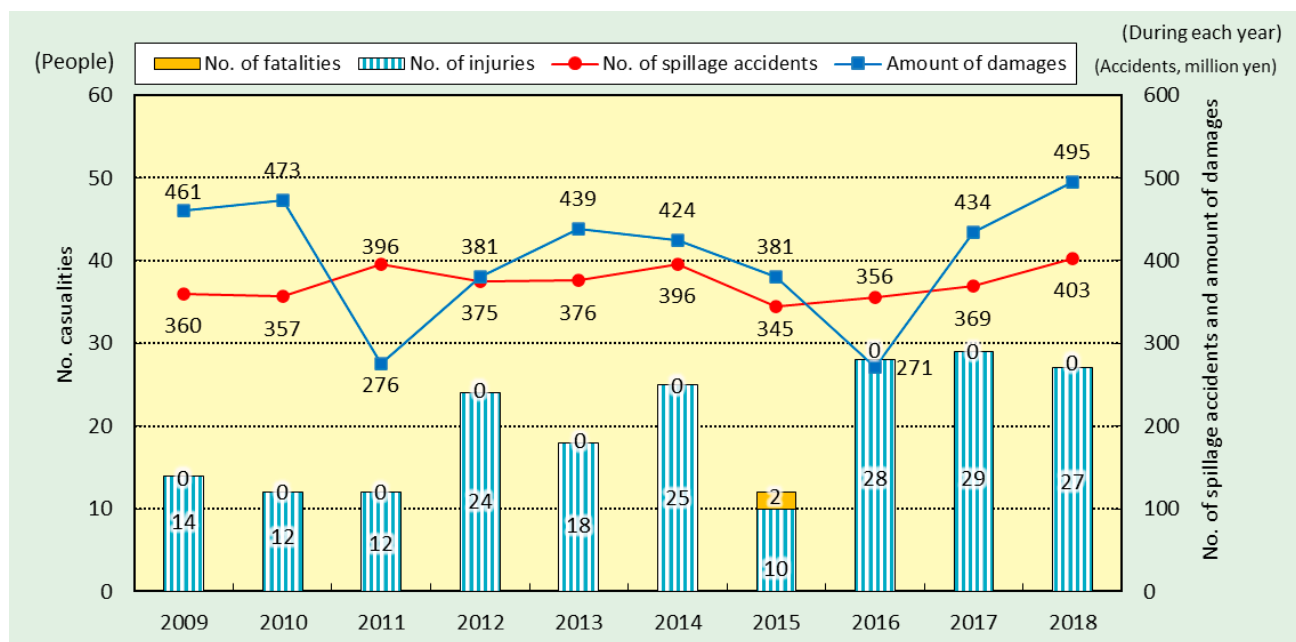
Conversely, 98.8% of the number of spillage accidents at facilities for hazardous materials involved spills of Class 4 hazardous materials, which consist primarily

of petroleum products. Viewing this item type reveals that Class 1 petroleum (gasoline, etc.) accounts for most of these, followed by Class 2 petroleum (light oil, etc.), Class 3 petroleum (heavy oil, etc.), and Class 4 petroleum (gear oil, etc.) in that order. (Fig. 1-2-9)

## (2) Causative Factors behind the Spillage Accidents at Facilities for Hazardous Materials

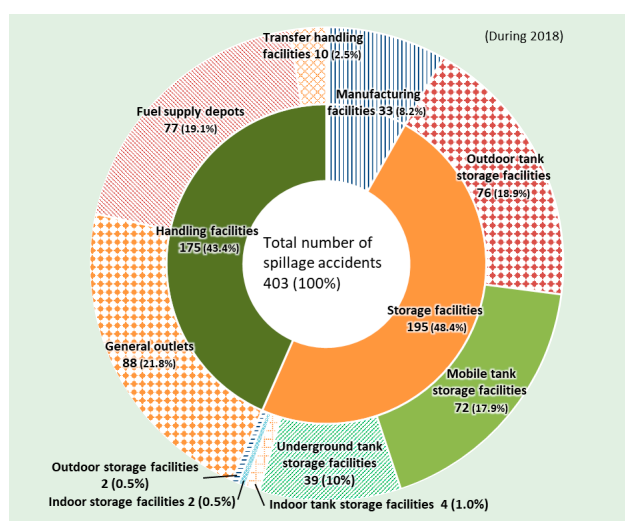
A look at the causative factors behind the spillage accidents at facilities for hazardous materials that occurred in 2018 reveals that human factors accounted for 37.2%, physical factors accounted for 53.3% and the total for other causes, unknown, and under investigation came to 9.4%. When viewed by causative factor, those caused by

**Fig. 1-2-7 Number of spillage accidents at facilities for hazardous materials and the damage**



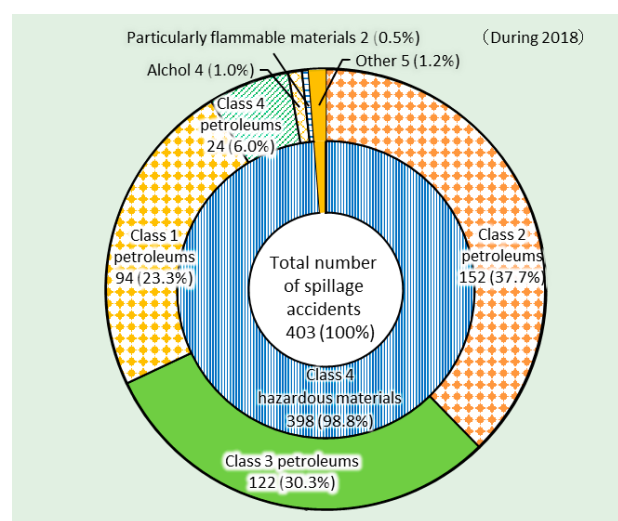
(Notes) Prepared based on "The Accident Reports on Hazardous Materials".

**Fig. 1-2-8 Number of spillage accidents by type of facility for hazardous materials**

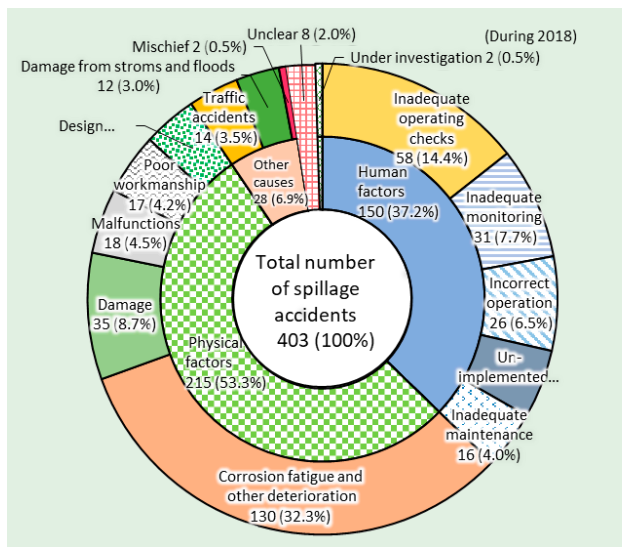


(Notes) 1 Prepared based on "The Accident Reports on Hazardous Materials".  
2 Digits in the second decimal place were rounded off, so in some cases the totals may not be consistent.

**Fig. 1-2-9 Number of spillage accidents by material spilled**



(Notes) 1 Prepared based on "The Accident Reports on Hazardous Materials".  
2 Digits in the second decimal place were rounded off, so in some cases the totals may not be consistent.

**Fig. 1-2-10 Number of spillage accidents by causative factor**

(Notes) 1 Prepared based on "The Accident Reports on Hazardous Materials".  
 2 Digits in the second decimal place were rounded off, so in some cases the totals may not be consistent.

deterioration such as corrosion fatigue were most common at 130 (an increase of 9 year-on-year), followed by 58 from inadequate operating checks (an increase of 16 year-on-year) and 35 damage (a decrease of 7 year-on-year). (Fig. 1-2-10)

### (3) Spillage Accidents at Unauthorized Facilities

The number of spillage accidents that occurred at unauthorized facilities in 2018 came to 7 (an increase of 4 year-on-year), with no casualties occurring as a continuation from 2017.

### (4) Spillage Accidents during the Transportation of Hazardous Materials

The number of spillage accidents that occurred during the transportation of hazardous materials in 2018 came to 12 (a decrease of 1 year-on-year), and they left 0 people dead (the same as the previous year), 1 people were injured (a decrease of 4 year-on-year).

### (5) Spillage Accidents during the Temporary Storage or Handling

Continuing from 2017, no spillage accidents during the temporary storage or handling of hazardous materials occurred in 2018.

☞ Japanese Original P.103

## Current Status of Hazardous Materials Administration

### 1. Regulations on Hazardous Materials

#### (1) Regulatory Structure for Hazardous Materials

The Fire Service Act designates substances with properties such as: (1) Carrying a significant risk of causing a fire, (2) Carrying a significant risk of spreading a fire once one starts, and (3) Being difficult to extinguish when a fire does break out, as "hazardous materials." (see P.14 \*2). Enacting safety regulations for the storage, handling and transportation of these hazardous materials has been posited as a move that will prevent fires; protect the lives, health, and property of the public from fires; and mitigate the damage from fires.

Regulations concerning hazardous materials have been instituted in a uniform manner throughout Japan through the partial revisions to the Fire Service Act of 1959 and by enacting cabinet orders on regulations for hazardous materials. Since then, efforts like revising the relevant legislation to ensure that it contains content like establishing necessary and sufficient technical standards that are safer for facilities for hazardous materials (see P.14 \*1) have sequentially been carried out in striving to thoroughly ensure safety at such facilities.

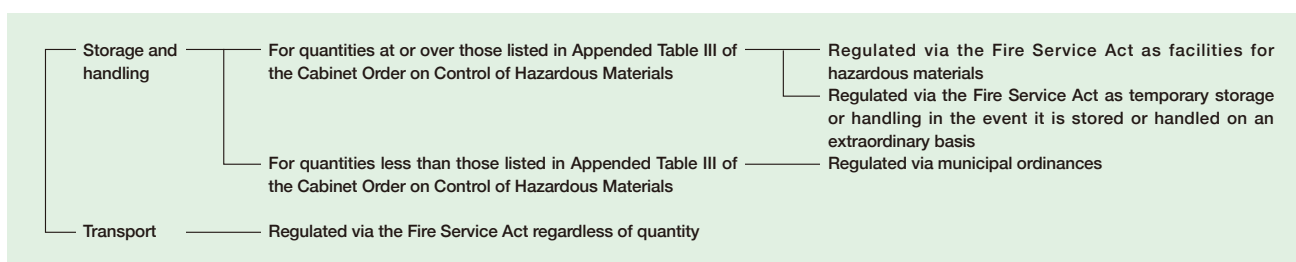
An overview of the regulations on hazardous materials is shown below. (Fig. 1-2-11)

- Hazardous materials of volumes at or above the designated quantities (the quantity at which authorization is necessary to store or handle a material as designated by the Fire Service Act) cannot be stored or handled at locations other than facilities for hazardous materials. Persons attempting to establish a facility for hazardous materials must ensure it is in compliance with the standards regarding its location, structure, and equipment specified by law, and receive authorization from the municipal mayor for this.
- The transportation of hazardous materials must be carried out in accordance with the standards for ensuring safety specified in law, regardless of how large or small the quantity is.
- Standards for the storage and handling of hazardous materials in volumes less than the designated quantities are to be established via municipal ordinances.

#### (2) Current Status of Facilities for Hazardous Materials

##### A. Number of Facilities for Hazardous Materials

The total number of facilities for hazardous materials

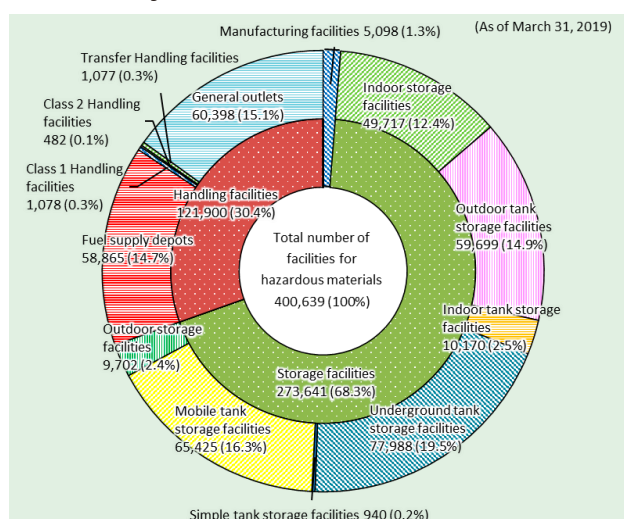
**Fig. 1-2-11 Regulatory structure**

**Table 1-2-1 Trends in the number of facilities for hazardous material**

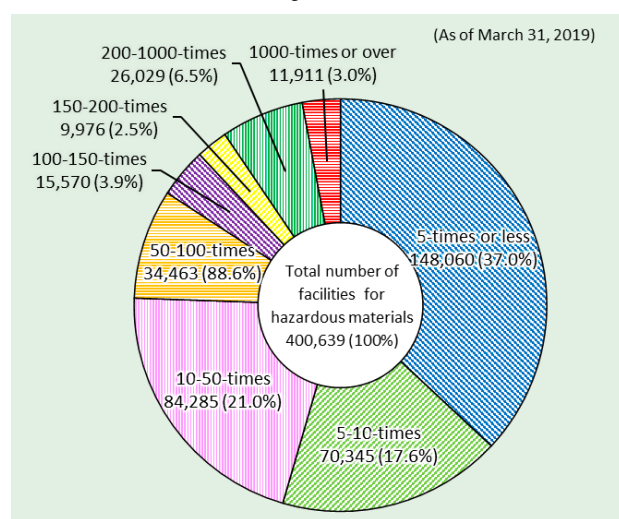
(As of March 31 of each year)

Facility		Year	2015 (A)	2016	2017	2018 (B)	2019 (C)	Rate of change (%)	
								(C/A-1)×100	(C/B-1)×100
Manufacturing facilities			5,106	5,088	5,096	5,093	5,098	△ 0.2	△ 0.1
Storage facilities	Indoor storage facilities		50,553	50,201	50,023	49,811	49,717	△ 1.7	△ 0.4
	Outdoor storage tanks		63,093	62,120	61,124	60,360	59,699	△ 5.4	△ 1.2
	Indoor storage tanks		11,021	10,802	10,586	10,386	10,170	△ 7.7	△ 1.9
	Underground storage tanks		85,499	83,341	81,417	79,723	77,988	△ 8.8	△ 2.1
	Simple storage tanks		1,019	1,002	986	961	940	△ 7.8	△ 2.5
	Transfer storage tanks		67,498	67,170	66,733	65,806	65,425	△ 3.1	△ 1.4
	Outdoor storage facilities		10,351	10,213	9,994	9,832	9,702	△ 6.3	△ 1.6
	Subtotal		289,034	284,849	280,863	276,879	273,641	△ 5.3	△ 1.4
Handling facilities	Fuel supply depots		62,269	61,401	60,585	59,715	58,865	△ 5.5	△ 1.4
	Class 1 sales handling facilities		1,209	1,178	1,138	1,107	1,078	△ 10.8	△ 2.7
	Class 2 sales handling facilities		518	510	499	493	482	△ 6.9	△ 1.2
	Transfer handling facilities		1,127	1,111	1,098	1,084	1,077	△ 4.4	△ 1.3
	General outlets		62,766	62,097	61,372	60,867	60,398	△ 3.8	△ 0.8
	Subtotal		127,889	126,297	124,692	123,266	121,900	△ 4.7	△ 1.1
	Total			422,029	416,234	410,651	405,238	400,639	△ 5.1

- (Notes) 1 Prepared based on "The Accident Reports on Hazardous Materials".  
 2 Digits in the second decimal place were rounded off, so in some cases the totals may not be consistent.

**Fig. 1-2-12 Number of facilities for hazardous materials by classification**

- (Notes) 1 Prepared based on "The Accident Reports on Hazardous Materials".  
 2 Digits in the second decimal place were rounded off, so in some cases the totals may not be consistent.

**Fig. 1-2-13 Composition rate of facilities for hazardous materials by size**

- (Notes) 1 Prepared based on "The Survey on Regulation Work of Hazardous Materials".  
 2 The factors are multiples obtained dividing the largest quantities stored or the largest quantities handled by the specified quantities stipulated in Appended Table III of the Cabinet Order on Control of Hazardous Materials.  
 3 The second decimal places were rounded up, so in some cases the totals may not align.

(number of facilities for construction permits) as of March 31, 2019 came to 400,639. (Table 1-2-1)

A look at the share of facilities by their classification reveals that storage facilities account for the majority at 68.3%, followed by handling facilities at 30.4% and then manufacturing facilities at 1.3%. (Fig. 1-2-12)

## B. Composition of Facilities for Hazardous Materials by Size

As for the number of facilities by size (according to the maximum storage quantity or the maximum handling quantity) of the total number of facilities for hazardous materials as of March 31, 2019, those facilities for hazardous materials that hold 50-times the designated

quantities or less account for 75.6% of the total. (Fig. 1-2-13)

## (3) Hazardous Material Engineers

Hazardous material engineers are classified into three types. Class A engineers can handle all hazardous materials, Class B engineers can handle types of hazardous materials for which they have obtained approval, and Class C engineers can handle designated hazardous materials from among the type 4. When hazardous material engineers or someone else handles hazardous materials at facilities for hazardous materials, a Class A or Class B hazardous material engineer must be present to ensure safety.

As of March 31 2019, the (cumulative) total number of people who have passed the hazardous material engineer test since the hazardous material engineer system was launched came to 9,602,611 people. They play a significant role in ensuring safety at facilities for hazardous materials.

#### A. Hazardous Material Engineer Tests

Hazardous material engineer tests were held 3,544 times throughout Japan in FY2018 (an increase of 140 year-on-year). They were taken by 355,361 people (a decrease of 25,682 people year-on-year), with 160,195 people passing (a decrease of 183 people year-on-year) for an average pass rate of roughly 45.1% (an increase of 3 points year-on-year). (Fig. 1-2-14)

Viewing the situation by test type and category reveals that 67.6% of the people took the test for Class B, Type 4, followed by Class C at 8.4% of the total. These two test types accounted for 76.0% of the total. The number of people who passed these two test types accounted for 68.1% of the total.

#### B. Safety Training Courses

As a general rule, the hazardous material engineers engaged in handling hazardous materials at facilities for hazardous materials must take a training course on safety

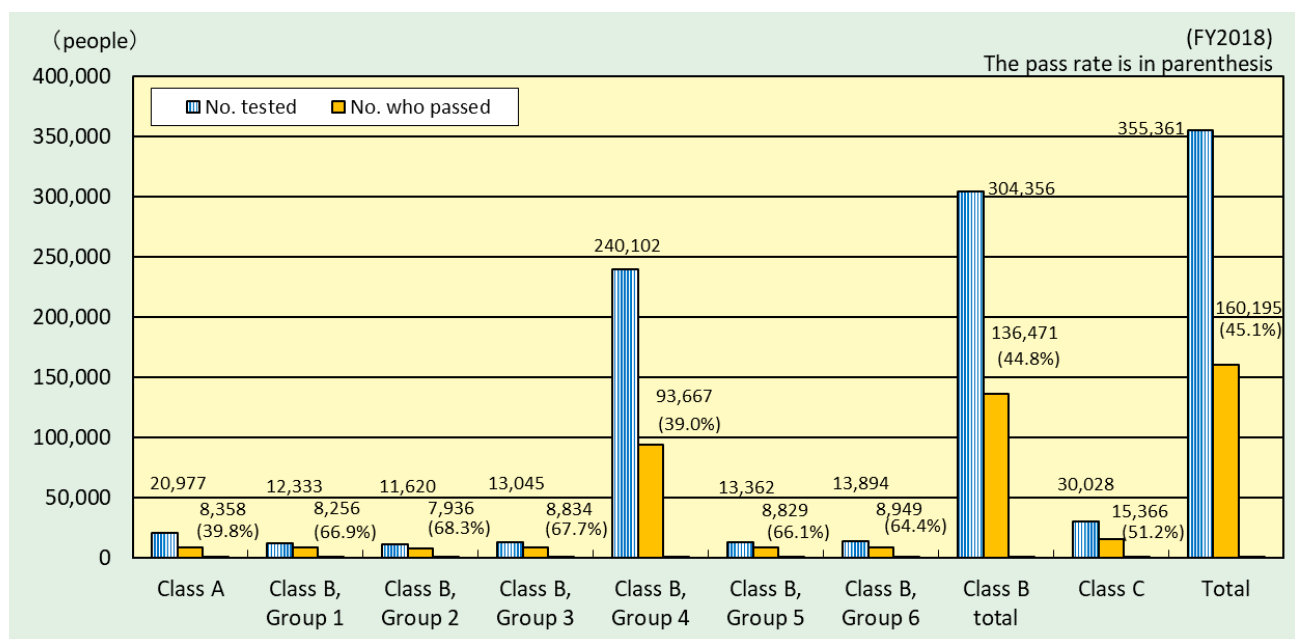
for handling hazardous materials offered by prefectural governors (safety training courses) within each three year period (starting from April 1, 2012, within three years from the first April 1 since the date on which the hazardous material engineer license was issued or the date they took the safety training course).

In FY2018, safety training courses were held a total of 1,452 times throughout Japan (a decrease of 8 times year-on-year), and were attended by 182,800 people (an increase of 12,513 people year-on-year). (Table 1-2-2)

#### (4) Safety Systems at Offices

As of March 31, 2019, the total number of business establishments that owned facilities for hazardous materials came to 183,082 throughout Japan. In an effort to establish safety systems at business establishments, it has been mandated that the owners of facilities for hazardous materials that store or handle hazardous materials at or above certain quantities must carry out certain obligations. These include appointing hazardous materials security superintendents, appointing safety officers for facilities for hazardous materials (1,615 business establishments), and preparing fire and disaster prevention rules (43,006 business establishments). Moreover, it has been mandated that said business establishments that own certain facilities for hazardous materials and that store or handle hazardous

Fig. 1-2-14 Holding of tests for hazardous material engineers



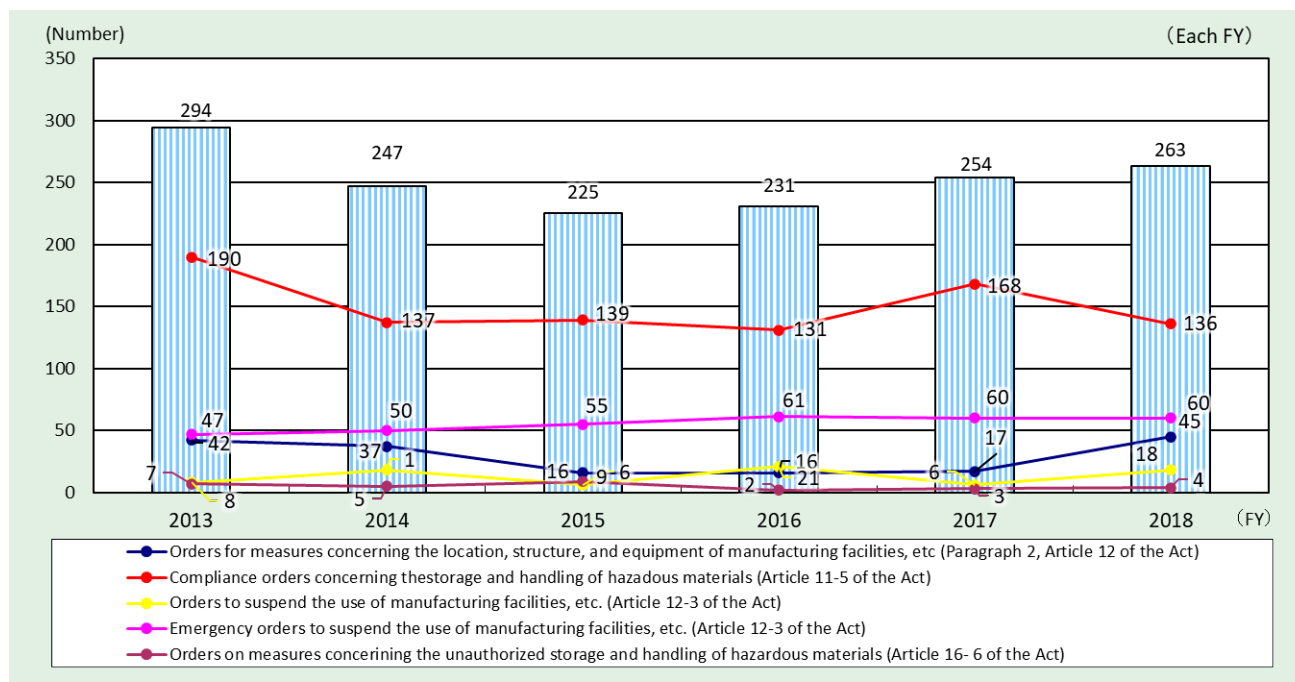
(Note) Prepared based on "The Statistical Table for the Testing and Certification of Hazardous Material Engineer" and "The Fire Protection Engineers by the Japan Fire Engineering Qualification Center".

Table 1-2-2 Number of attendees at safety training courses for hazardous material engineers and a breakdown of this by type of hazardous material engineer certifications

(As of March 31 of each FY)

FY	Category	No. of attendees	Class A	Class B						Class C	Total by type	No. of training courses	
				Group 1	Group 2	Group 3	Group 4	Group 5	Group 6				Subtotal
2014		162,977	14,002	9,032	10,046	8,294	146,800	9,476	10,388	194,036	27,502	235,540	1,363
2015		178,843	14,280	9,507	10,554	9,008	152,324	10,362	11,248	203,003	25,473	242,756	1,407
2016		178,002	14,182	10,702	11,581	10,129	153,091	11,452	11,991	208,946	24,660	247,788	1,467
2017		170,287	14,219	10,536	11,511	9,739	142,322	11,125	11,664	196,897	23,815	234,931	1,460
2018		182,800	14,813	11,215	11,721	10,106	153,670	11,526	12,444	210,682	24,402	249,897	1,452



**Fig. 1-2-15 Trends in orders for measures related to facilities for hazardous materials**

(Note) Prepared based on "The Survey on Regulation work of Hazardous Materials".

materials at or above certain quantities must establish fire defense organizations for self-protection (75 business establishments) and appoint hazardous material safety supervising managers (205 business establishments).

### (5) Safety Inspections

It has been mandated that the owners of outdoor storage tanks and transfer handling facilities at or over a certain size must undergo inspections on the safety of facilities for hazardous materials performed by municipal mayors and similar officials (safety inspections) at regular fixed intervals according to factors like the facilities' size.

In FY2018, 229 safety inspections were performed, of which 224 involved outdoor storage tanks and 5 involved transfer handling facilities.

### (6) Onsite Inspections and Orders

Municipal mayors and similar officials can perform onsite inspections on facilities for hazardous materials and other such facilities to ensure that their installation, construction, and establishment of equipment, as well as storage or handling of hazardous materials, are in compliance with the standards established in the Fire Service Act. These can be carried out when said official deems it necessary to prevent fires that arise consequent upon the storage or handling of hazardous materials.

In FY2018, onsite inspections were carried out a total of 193,803 times at 177,747 facilities for hazardous materials. In cases where violations of the Fire Service Act were discovered as a result of the onsite inspections, these municipal mayors and other officials can issue a variety of different orders to the owners of said facilities for hazardous materials. These include orders to comply with regulations on storage and handling, orders to take

measures related to standards for installing, constructing, or establishing equipment, and more.

In FY2018 municipal mayors or similar officials issued such orders to take measures in 263 cases. (Fig. 1-2-15)

## 2. Securing Petroleum Pipelines

### (1) Safety Regulations for the Petroleum Pipeline Business

Regarding those petroleum pipelines which are used to transport petroleum in response to general demand, the competent minister must formulate basic plans and listen to the opinions of the Minister of Internal Affairs and Communications regarding business licenses in order to ensure safety pursuant to the Petroleum Pipeline Business Act enacted in 1972. What is more, the Minister of Internal Affairs and Communications provides licenses for construction plans, performs completion inspections, provides licenses for safety regulations, performs safety inspections, and more.

The facilities to which the Petroleum Pipeline Business Act apply currently only include the pipelines transporting airplane fuel to Narita International Airport, with other pipelines regulated as transfer handling facilities under the Fire Service Act.

### (2) Ensuring the Safety of Petroleum Pipelines

Safety inspections are carried out periodically on the pipelines transporting airplane fuel to Narita International Airport pursuant to the Petroleum Pipeline Business Act. In addition, the business operators must do everything they possibly can to ensure safety, such as having maintenance and inspections carried out in accordance with the technical standards established by law.

# Section 3 Countermeasures to Disasters at Petroleum Industrial Complexes

Japanese Original P.111

## Current Status and Recent Trends in Disasters at Petroleum Industrial Complexes

### 1. Number of Accidents and Damage

The total number of accidents that occurred at specified business establishments\*<sup>1</sup> in petroleum industrial complexes and other special disaster prevention areas (hereafter referred to as “special disaster prevention areas”) in 2018 came to 398, of which 84 were accident from earthquakes and tsunamis (hereafter referred to as “earthquake-induced accidents”), and 314 were other than earthquake-induced (hereafter referred to as “general accidents”).

All of earthquake-induced accidents were caused by “Eastern Iburi Earthquake in Hokkaido”, which occurred on September 6, 2018 and recorded a maximum seismic intensity of 7.

Looking at trends in the number of general accidents that have occurred reveals that these had been on an upswing since 1989 and had been hovering around 250 in recent year. However, in 2018 they increased further to 314 (an increase of 62 year-on-year). This number is the

highest ever recorded. (Fig.1-3-1)

In 2018 there were 27 accidents (an increase of 17 year-on-year) that caused casualties, all of which occurred in general accidents. They resulted in 1 death (an increase of 1 year-on-year), 33 casualties (an increase of 18 year-on-year). (Fig.1-3-2)

Fig. 1-3-2 Trends in the Number of Fatal Accidents and Fatalities

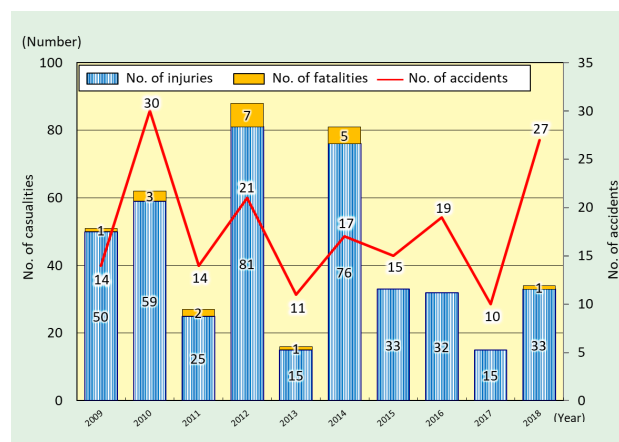
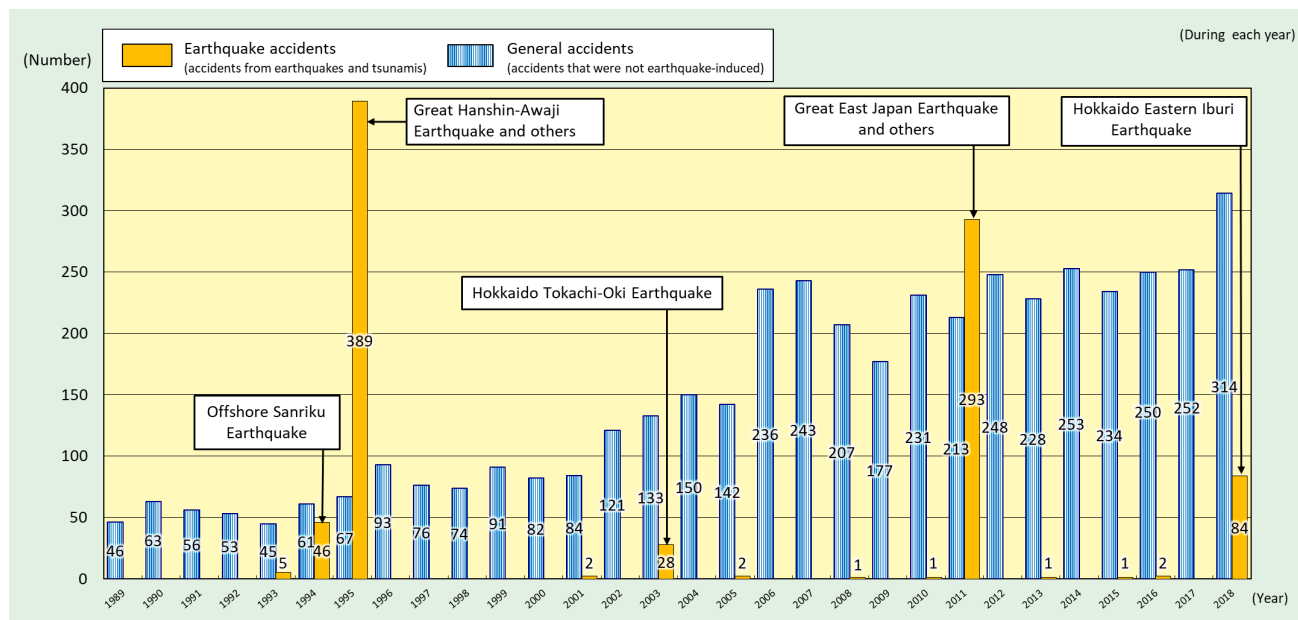


Fig. 1-3-1 Trends in the number of accidents that occurred at petrochemical complexes



(Note) Prepared based on “The Overview of Accidents at Specified Business Establishments in Petroleum Industrial Complexes and Other Special Disaster Prevention Areas (2017)”.

\*<sup>1</sup> Specified business establishments: These refer to Class 1 business establishments (business establishments where 10,000 kiloliters of petroleum or more are stored or handled, or where 2 million cubic meters of high-pressure gas or more are processed) and Class 2 business establishments (business establishments where 1,000 kiloliters of petroleum or more are stored or handled, or where 200,000 cubic meters of high-pressure gas or more are processed).



## 2. Characteristics of Accidents

### (1) Number of General Accidents by Type of Accident

Looking at the number of general accidents by type of accident, it reveals that 146 fires (an increase of 16 year-on-year), 6 explosions (an increase of 5 year-on-year), 155 leaks (an increase of 40 year-on-year), and 7 other accidents (an increase of 1 year-on-year). (Fig. 1-3-3)

### (2) Number of General Accidents by Cause of Accident

Looking at the number of general accidents by cause, it reveals that 133 accidents were due to human factors (an increase of 32 year-on-year), 156 (an increase of 17 year-on-year) due to physical factors, and 25 (an increase of 13 year-on-year) due to other factors. The main causes were 89 cases of deterioration due to corrosion and fatigue (an increase of 27 year-on-year), 53 cases of insufficient operation confirmation (an increase of 20 year-on-year), and 37 cases of insufficient maintenance and management (a decrease of 3 year-on-year). (Fig. 1-3-4)

### (3) Number of General Accidents by Type of Specified Business Establishment

Looking at the number of general accidents by cause, it reveals that 244 accidents, or 77.7%, were occurred at Class 1 business establishments (213 of which layout establishments\*<sup>2</sup>). (Table 1-3-1)

### (4) Number of General Accidents at Specified Business Establishment by Type of Business Category

As for the number of general accidents by cause, there were 99 petroleum and coal products manufacturing industry-related accidents (an increase of 28 year-on-

Fig. 1-3-4 Number of General Accidents by Cause of Accident

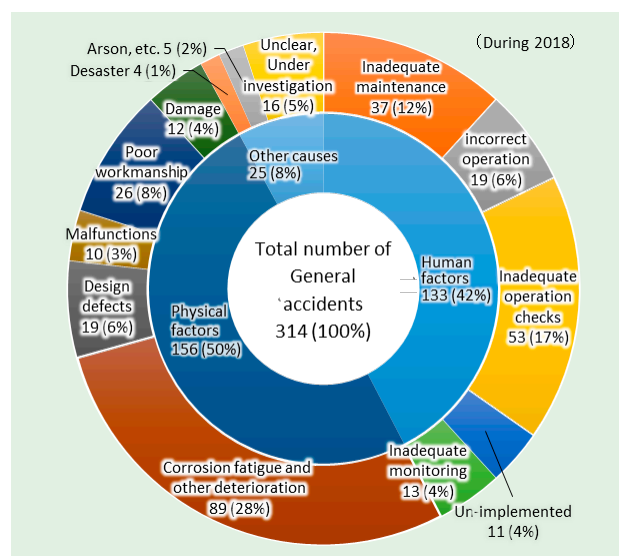
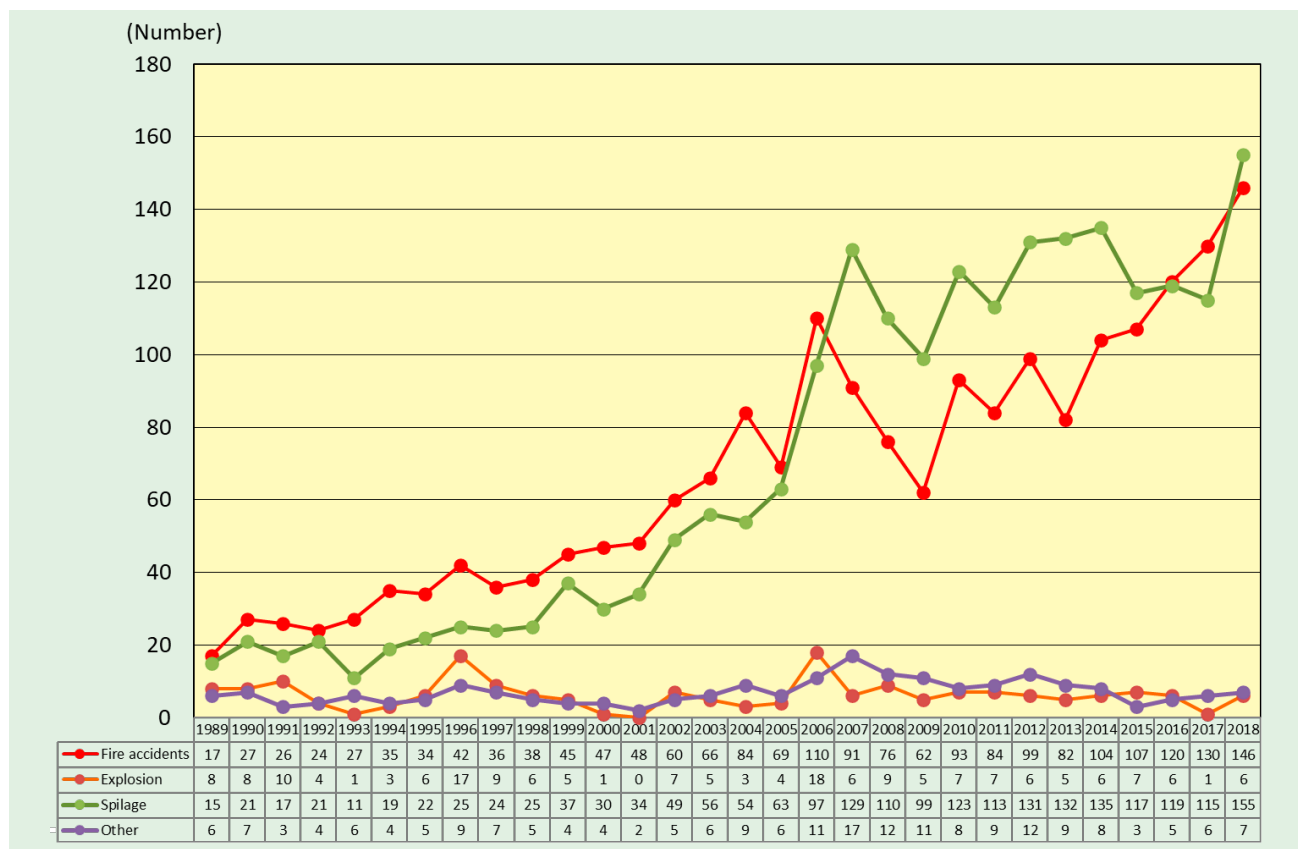


Fig. 1-3-3 Trends in the Number of General Accidents by Type of Accident



\*<sup>2</sup> Layout business establishments: Business establishments from among Class 1 business establishments that handle both petroleum and high-pressure gases. Said business establishments are subject to layout regulations stipulating that their sites must be segmented off into six types of sections according to their purpose, with these including manufacturing facility sections and storage facility sections (see P.105).

**Table 1-3-1 Number of General Accidents by Type of Specified Business Establishment**

(During 2018)

Type of business establishment	No. of business establishments (A)	No. of accidents (B)	Share of the total No. of accidents(%)	No. of accidents per business establishments (B/A)
Class 1 business establishments	344	244	77.7	0.71
Layout business establishments	160	213	67.8	1.33
Other business establishment	184	31	9.9	0.17
Class 2 business establishments	328	70	22.3	0.21
Total	672	314	100.0	0.47

(Notes) 1 Prepared based on “The Overview of Accidents at Specified Business Establishments in Petroleum Industrial Complexes and Other Special Disaster Prevention Areas in 2018”.

2 The number of business establishments is current as of April 1, 2018.

**Table 1-3-2 Number of General Accidents at Specified Business Establishments by Business Category**

Business Category	Type of accidents				Number of accidents		Number of accidents by business category	
	Fire	Explosion	leak	Other	Subtotal	Share of the total No. of accidents(%)	No. of business establishments	No. of accidents per business establishments
Food manufacturing-related	1				1	0.3	12	0.08
Pulp, paper, processed paper manufacturing-related	1		2		3	1.0	3	1.00
Chemical industry-related	35	2	50	4	91	29.0	227	0.40
Petroleum and coal products manufacturing industry-related	28	3	67	1	99	31.5	48	2.06
Ceramic industry-related	1		1		2	0.6	10	0.20
Steel industry-related	55	1	5		61	19.4	31	1.97
Non-ferrous metal industry-related	1		3		4	1.3	6	0.67
Industrial Machinery manufacturing-related	8		1		9	2.9	9	1.00
electrical industry-related	10		13		23	7.3	61	0.38
Gas industry-related	1		5		6	1.9	27	0.22
Warehouse industry-related			4		4	1.3	223	0.02
Waste disposal industry-related	3				3	1.0	9	0.33
Other	2		4	2	8	2.5	6	1.33
Total	146	6	155	7	314	100.0	672	0.47

(Notes) 1 Prepared based on “The Overview of Accidents at Specified Business Establishments in Petroleum Industrial Complexes and Other Special Disaster Prevention Areas in 2018”.

2 The number of business establishments is current as of April 1, 2018.

year), 91 chemical industry-related accidents (an increase of 20 year-on-year), 61 steel industry-related accidents (a decrease of 3 year-on-year), 23 electrical industry-related accidents (an increase of 7 year-on-year). (Table 1-3-2)

### Current Status of Damage Countermeasures at Petroleum Industrial Complexes

In order to prevent disasters from occurring and spreading at special disaster prevention areas, where large quantities of petroleum and high pressure gasses are concentrated, efforts are made to establish comprehensive disaster prevention structures for these. This includes by applying the various regulations from the Fire Service Act, the High Pressure Gas Safety Act, the Industrial Safety and Health Act, the Act on Prevention of Marine Pollution and Maritime Disasters, and others, as well as by applying the regulations from the Act on the Prevention of Disaster in Petroleum Industrial Complexes and Other Petroleum Facilities regarding issues like the arrangements of the various facility sections and disaster prevention equipment.

## 1. Current Status of Special Disaster Prevention Areas

As of April 1, 2019, 84 areas in which large quantities of petroleum or high pressure gas at or above certain quantities have been designated as special disaster prevention areas in 103 municipalities in 33 prefectures based on the Act on the Prevention of Disaster in Petroleum Industrial Complexes and Other Petroleum Facilities. (Fig. 1-3-5) These special disaster prevention areas are under the jurisdiction of 91 fire departments.

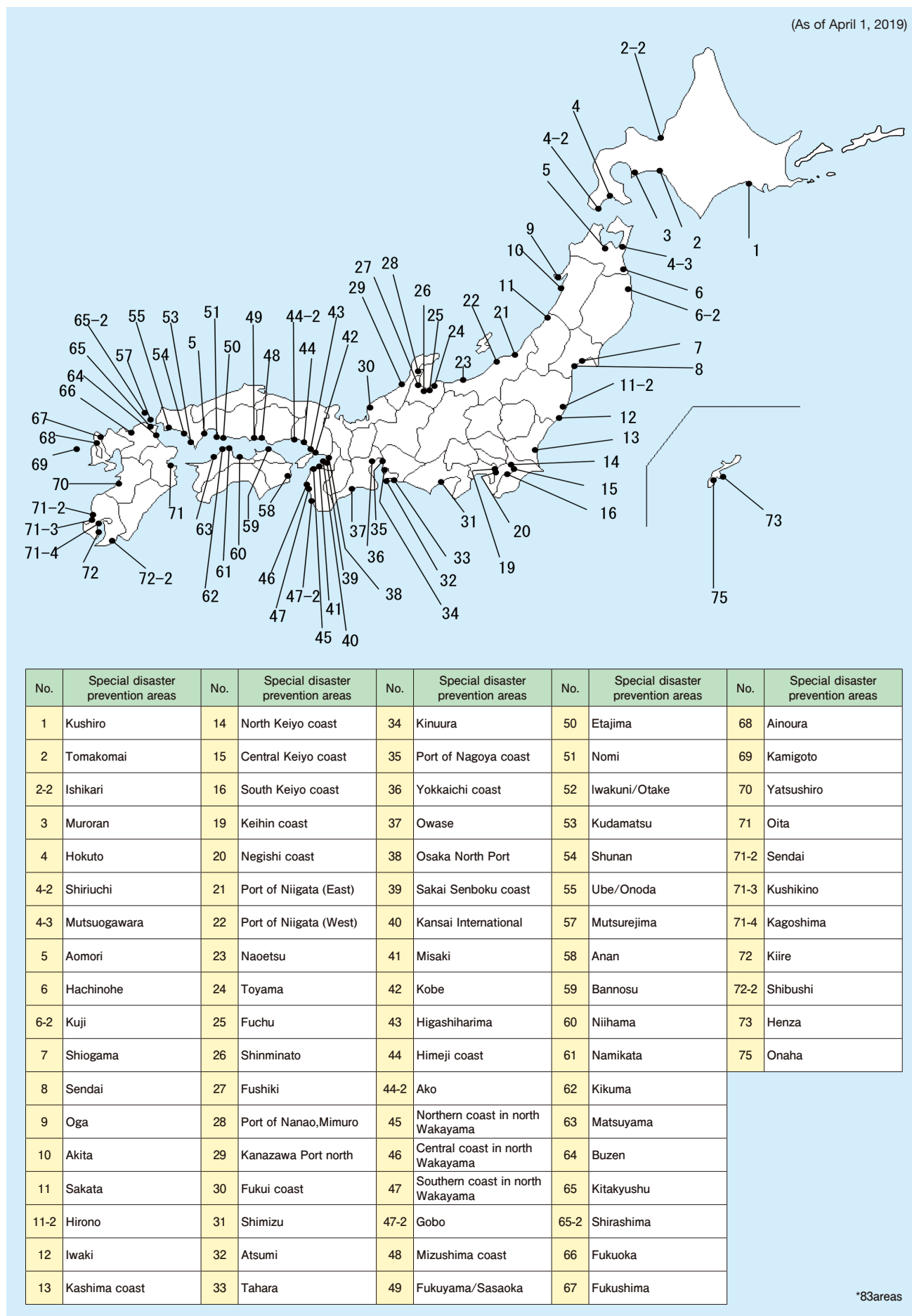
What is more, 667 business establishments serve as specified business establishments subject to the regulations of the Act on the Prevention of Disaster in Petroleum Industrial Complexes and Other Petroleum Facilities. Of these, 340 are Class 1 business establishments (including 158 layout business establishments) and 327 are Class 2 business establishments.

## 2. Disaster Prevention Structure at Prefectures and Firefighting Agencies

### (1) Establishing Disaster Prevention Schemes

The prefectures that contain special disaster prevention areas are establishing disaster prevention structures in a

Fig. 1-3-5 Designation Status for Special Disaster Prevention Areas



comprehensive and systematic manner based on the Act on the Prevention of Disaster in Petroleum Industrial Complexes and Other Petroleum Facilities. This is being done through concerted efforts together with relevant agencies centering primarily on disaster prevention headquarters at petroleum industrial complexes and other locations (hereafter referred to as “disaster prevention headquarters”).

The disaster prevention headquarters carry out operations such as preparing disaster prevention plans for petroleum industrial complexes and other locations (hereafter referred to as “disaster prevention plans”), liaising and coordinating with relevant agencies when disasters strike, and promoting research studies on disaster prevention.

## **(2) Emergency Responses when Disasters Occur**

When disasters occur in special disaster prevention areas, emergency responses consist of initiatives carried out in a concerted manner by the prefecture, municipality, related agencies, specified business operators and others under the leadership of the disaster prevention headquarters, as stipulated by the disaster prevention plan.

When disasters occur, firefighting agencies carry out defense activities, give instructions regarding the activities of disaster prevention organizations for self-defense, and carry out other important roles.

## **(3) Maintaining the Firefighting Capabilities of Municipalities Containing Special Disaster Prevention Areas**

As of April 1, 2019, 73 large chemical firetrucks, 59 large elevated water trucks, 88 foam solution transport vehicles, 33 large elevated chemical water trucks, 3,135kL of 3% fire-extinguishing foam, 773kL of 6% fire-extinguishing foam, 34 fireboats, and other such equipment had been allocated to firefighting agencies in municipalities containing special disaster prevention areas. Likewise, 23 foam solution storage facilities, 5 portable foam cannons, and other such equipment has been allocated to prefectures containing special disaster prevention areas in order to supplement their municipal firefighting capabilities, as well as enhance and strengthen the disaster prevention structures of said special disaster prevention areas.

In addition, the FDMA has deployed the Emergency Response Unit for Energy/Industrial Disaster (“Dragon Hyper Command Unit”), which specialized in special disasters, to 12 areas under National Fire-Service Teams, and firefighting robots (Scrum Force), in order to support the municipalities which located in special disaster prevention areas.

## **3. Disaster Prevention Structure at Specified Business Establishments**

### **(1) Establishing Disaster Prevention Organizations for Self-defense**

The Act on the Prevention of Disaster in Petroleum Industrial Complexes and Other Petroleum Facilities mandates that those operators that establish specified business establishments (specified business operators) must set up disaster prevention organizations for self-defense, prepare fire protection equipment, appoint disaster protection managers, formulate disaster prevention regulations, and so forth. It also stipulates that they are to establish joint disaster prevention associations,<sup>\*3</sup> wide-area joint disaster prevention associations,<sup>\*4</sup> and special disaster prevention area councils for petroleum industrial complexes and the like (hereafter referred to as “area councils”)<sup>\*5</sup>.

As of April 1, 2019, disaster prevention organizations for self-defense had been established at every specified business establishment (667 business establishments), and 72 joint disaster prevention associations, 11 wide-area joint disaster prevention associations, and 55 area councils had also been established. These disaster prevention organizations for self-defense, joint disaster prevention associations, and wide-area joint disaster prevention associations are equipped with 5,360 disaster prevention personnel, 85 large chemical fire trucks, 47 large elevated water trucks, 127 foam solution transport vehicles, 113 large elevated chemical water trucks, 24 high capacity foam cannons, 22 oil recovery vessels, and more.

What is more, the law states that these specified business establishments must establish embankments to prevent oil spills, outdoor water supply equipment for firefighting, and emergency notification systems according to their size. As of April 1, 2019, 142 business establishments had installed embankments to prevent oil spills, 491 had installed outdoor water supply equipment for firefighting, and 464 had installed emergency notification systems, respectively.

### **(2) Equipping High Capacity Foam System**

During the Tokachi-Oki Earthquake that occurred in September 2003, damage that included damage to and oil leaks from numerous outdoor storage tanks occurred at an oil refining business establishment in Tomakomai City. In addition, approximately 54 hours after the earthquake struck all of the floating roof outdoor storage tanks caught fire when the floating roof sank.

Before this disaster struck, it had been assumed that the fires that would occur at floating roof outdoor storage tanks would be ring fires.<sup>\*6</sup> But out of consideration for the risk of earthquakes occurring in Japan, the assumption for a disaster had to be that a fire would spread to all of the tanks.

In light of this, the Act on the Prevention of Disaster

<sup>\*3</sup> Joint disaster prevention associations: Disaster prevention associations jointly established by the specified business operators involved with specified business establishments containing a single special disaster prevention area in order to carry out some of the tasks of the disaster prevention organization for self-defense.

<sup>\*4</sup> Wide-area joint disaster prevention associations: Joint disaster prevention associations covering a wide area jointly established by specified business operators involved with specified business establishments containing areas in which there are two or more special disaster prevention areas to carry out tasks related to disaster prevention activities by using large volume foam cannons and other equipment.

<sup>\*5</sup> Special disaster prevention area councils for petroleum industrial complexes and the like: These are councils established with the objective of having specified business operators related to specified business establishments located in a single special disaster prevention area come together to jointly draft independent standards related to preventing disasters from occurring and carrying out joint disaster prevention drills.





The high capacity foam system

in Petroleum Industrial Complexes and Other Petroleum Facilities was revised in June 2004 and the order for the enforcement of this law was revised in November 2005 to strengthen and enhance disaster prevention structures. Furthermore, it was mandated that specified business establishments must equip themselves with high capacity foam systems, which were a new type of firefighting equipment then, by November 2008 in order to respond to fires that fully envelop floating roof outdoor storage tanks. High capacity foam systems are a type of firefighting equipment that consist of high capacity foam cannons, feed pumps, foam mixers, and hoses. They have the capacity to spray more than 10,000 liters of foam per minute. A single high capacity foam cannon is capable of spraying anywhere up to ten times as much foam as a conventional three-part set (consisting of a large chemical firetruck, large, elevated water truck, and a foam solution transport vehicle).

At present, high capacity foam systems with the capacity to spray anywhere from 10,000 to 40,000 liters per minute are stationed at 12 wide-area joint disaster prevention associations throughout Japan.

### (3) Enhancing Disaster Prevention Structure for Self-defense

The fact that petroleum industrial complexes handle large quantities of hazardous materials and the like and have equipment that is complexly interconnected makes disaster prevention activities difficult, and as such carries the risk that this will result in enormous damage. Therefore, when such disasters occur, disaster prevention organizations for self-defense and joint disaster prevention associations must carry out precise disaster prevention activities. In addition, the disaster prevention personnel responsible for said activities require extensive knowledge and skills.

The FDMA issued standardized educational textbooks and enhancing both human resource development for

disaster prevention personnel, which is easy to visually understand. The FDMA shows a training model that can be used by both novices and experts to acquire the knowledge and skills necessary for disaster prevention personnel, such as initial response to disasters and cooperation with public fire departments.

## 4. Layout Regulations for Business Establishments

### (1) Layout Regulations

Just regulating each individual facility at the business establishments is not enough and other measures must be taken by business establishments on the whole from the perspective of mitigating damage. Because disasters are particularly likely to spread at layout business establishments that handle large amount of petroleum and high-pressure gases.

Therefore, the Act on the Prevention of Disaster in Petroleum Industrial Complexes and Other Petroleum Facilities mandates that layout business establishments must establish certain standards related to establishing facility areas on their sites and ensuring passageways. It also mandates that in cases like where business establishments are newly established or change their facility area layouts, they must provide notification of the plans for this. It also stipulates that they must undergo confirmation after these have been completed to determine whether or not they are consistent with the relevant plans.

### (2) Status for New Establishment and Other Notifications

The number of notifications for new establishments of or changes to layout business establishments in FY2018 came to 10, while the number of confirmations in the same year came to 8. (Fig. 1-3-6)

## 5. Other Disaster Countermeasures

### (1) Establishing Disaster Response Structure

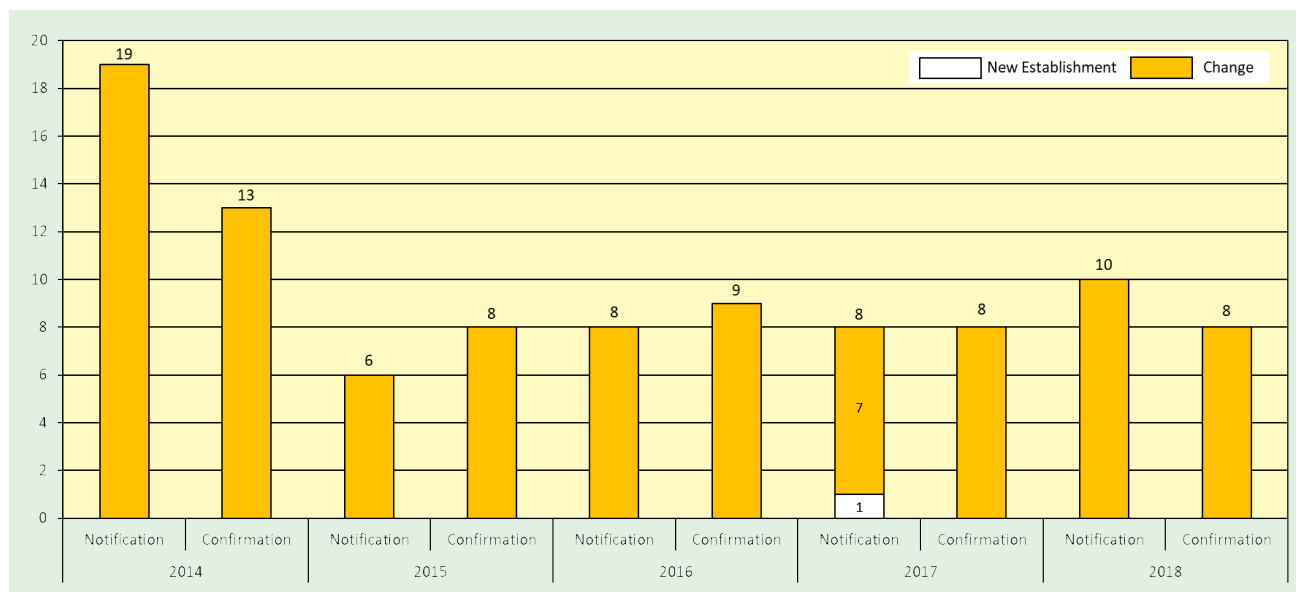
The Act on the Prevention of Disaster in Petroleum Industrial Complexes and Other Petroleum Facilities states that specified business operators must report to firefighting agencies or locations specified by municipal mayors immediately when any abnormal phenomena occurs.<sup>\*7</sup> It also mandates that disaster prevention organizations for self-defense, joint disaster prevention associations, and wide-area joint disaster prevention associations must take the necessary measures in order to prevent disasters from occurring and spreading.

### (2) Establishing Green Buffer Zones for Disaster Prevention

Regulations were established in the Act on the Prevention of Disaster in Petroleum Industrial Complexes and Other Petroleum Facilities in relation to matters like drafting installation plans, the share of costs to be borne by business operators, and special financial measures for green buffer zones for disaster prevention established by local governments in the vicinities around special disaster

<sup>\*6</sup> Ring fires: Fires that occur at floating roof outdoor storage tanks all the way around the tank in the gap between the floating roof and the tank's side panel before spreading out in a ring pattern.

<sup>\*7</sup> Abnormal phenomena: Fires, explosions, spills of oil and other substances, and other such abnormal phenomena at specified business establishments.

**Fig. 1-3-6 Status for Notifications and Confirmations of New Layout Business Establishment, etc.**

- (Notes) 1 Prepared based on the number of notifications received in accordance with the provisions of Articles 5 and 7 of the Act on the Prevention of Disasters in Petroleum Industrial Complexes and Other Petroleum Facilities.  
 2 Prepared based on the number of confirmed cases as stipulated in Article 11 of the provisions of Articles 5 and 7 of the Act on the Prevention of Disasters in Petroleum Industrial Complexes and Other Petroleum Facilities  
 3 The number of notifications and the number of confirmations for each fiscal year do not match because a certain amount of time is required for construction after the notification of new establishment, etc., before confirmation is made.

prevention areas in order to prevent damage in said areas from spreading to the surrounding regions.

## 6. Recent Disaster Measures at Petroleum Industrial Complexes

### (1) Liaison Conference of Related Ministries and Agency for Examining Disaster Prevention Measures at Petroleum Industrial Complexes, etc.

In the wake of the fatal explosion and fire at the Yokkaichi Plant of Mitsubishi Materials Co., Ltd. that occurred in January 2014, the FDMA, the Ministry of Health, Labour and Welfare, and the Ministry of Economy, Trade and Industry, which are the ministries and agency responsible for safety at petroleum industrial complexes, have held regular liaison conferences since FY2014.

The purpose of this liaison conference is to exchange information on incidents, share policy trends, promote efforts for business operators to prevent disasters, and work together to take action in the event of a disaster. The ministries and agency work together to prevent disasters at petroleum industrial complexes by promoting accident prevention efforts and publishing and sharing incident-related information on the Internet.

In FY2018, “Guidelines for Safe Operation of Drones at Plants” were drawn up to promote the further utilization of drones for daily inspections at petroleum industrial complexes and quick inspections in the event of a disaster, and these guidelines were made known to prefectural governments, fire departments, and business establishments.

It is expected that the further use of drones will lead to improved plant safety and the elimination of occupational accidents.

Fire and Disaster Management for Petroleum Industrial

Complexes, etc.; Liaison Conference of FDMA, MHLW, and METI; Website run jointly by the three organizations: [https://www.fdma.go.jp/relocation/neuter/topics/fieldList4\\_16.html](https://www.fdma.go.jp/relocation/neuter/topics/fieldList4_16.html)

### (2) Earthquake and Tsunami Measures for Petroleum Industrial Complexes, etc.

As there is concern about damage occurring due to the Nankai Trough earthquake or an earthquake directly under the Tokyo metropolitan area, based on the state of damage of the Great East Japan Earthquake, work is being done to enhance and strengthen disaster prevention systems at petroleum industrial complexes, etc., such as by revising disaster prevention assessment guidelines and handbooks for disaster prevention efforts of self-defense disaster prevention organizations.

### (3) Skill Contest for Self-defense Disaster Prevention Organizations at Petroleum Industrial Complexes, etc.

The FDMA holds a “Skill Contest for Self-Defense Disaster Prevention Organizations at Petroleum Industrial Complexes, etc.” with the aim of improving the skills and morale of disaster prevention personnel such as those of self-defense disaster prevention organizations at specific business establishments.

The context of this is that around the time of “World Tsunami Awareness Day” on November 5, the Minister of Internal Affairs and Communications and the Commissioner of the FDMA commends self-defense disaster prevention organizations, etc. that have achieved excellent results in competing for safe, reliable, and prompt training that assumes the application of fire-extinguishing foam agents on a large-scale tank fire with the use of large elevated hazardous material unit





Skill contest

fire truck and CAFS tanker or an elevated fire truck and hazardous material unit fire truck, etc. at specific business establishments.

#### **(4) Holding an Examination Meeting to Strengthen the Disaster Prevention Systems of Petroleum Industrial Complexes, etc.**

The FDMA holds examination meetings for the purpose of enhancing the disaster prevention systems of petroleum industrial complexes.



Commendation Ceremony for the Self-Defense Disaster Prevention Organization Skill Contest at Petroleum Industrial Complexes, etc.

In FY2018, it researched and examined the disaster prevention plans of petroleum industrial complexes and so on and disaster prevention drills conducted by disaster prevention headquarters.

To further enhance the functions of disaster prevention headquarters through the facilitation of information exchange between other disaster prevention headquarters, the FDMA has compiled and published a report on good practices for disaster prevention plans and disaster prevention drills of petroleum industrial complexes, etc.

—omitted—

# Section 1

## Fire Service Structure

📖 Japanese Original P.171

### 1. Fire Defense Organizations

#### (1) Standing Firefighting Agencies

Standing firefighting agencies refer to the fire departments and fire stations established in municipalities that are staffed by full-time personnel. As of April 1, 2019, there were 726 fire departments and 1,719 fire stations established throughout Japan. (Table 2-1-1) There are 165,438 firefighters, of which 5,307 are women. (Table 2-1-1, Fig. 2-1-1)

The current fire service structures found in municipalities can largely be categorized into: [1] Municipalities with both fire departments and fire stations (so-called standing fire defense) as well as volunteer fire corps (so-called non-standing fire defense), and [2] Towns and villages with only volunteer fire corps.

As of April 1, 2019, 1,690 municipalities had switched over to a standing fire defense structure, whereas 29 towns and villages had failed to do so. This brings the percentage of municipalities that have switched over to a standing fire defense structure (standing ratio) to 98.3% (100% for cities and 96.9% for towns/villages). This conversion has taken place virtually nationwide, barring some towns and villages in mountainous regions or on remote islands, with 99.96% of the population now covered by standing fire defense structures.

Of these, there have been 289 fire departments established by special district authorities or extended associations (22 of which were established by extended associations). The 1,110 municipalities that have organized these (371 cities, 599 towns, and 140 villages) correspond

to 65.7% of the total number of municipalities that have switched to a standing fire defense structure.

What is more, the number of municipalities outsourcing this work comes to 143 (37 cities, 86 towns, and 20 villages), which corresponds to 8.5% of the total number of municipalities that have switched to a standing fire defense structure. (Fig. 2-1-2)

#### (2) Volunteer Fire Corps

Volunteer fire corps are municipal, non-standing firefighting agencies. The volunteer firefighters that comprise their members have other main occupations, and engage in fire and disaster defense activities based on their love for their hometown and a desire to protect it under the thinking that they should be the ones to protect their own communities themselves. They do this as local government employees in special part-time positions vested with authority and responsibility.

As of April 1, 2019, the number of volunteer fire corps throughout Japan came to 2,198, while their volunteer members numbered 831,982. They have been established in every municipality. (Table 2-1-1, Fig. 2-1-1)

Volunteer fire corps have the unique qualities of being:

- Rooted in local communities (volunteers live or work within the jurisdiction)
- Able to dispatch personnel (there are roughly 5.0-times the number of volunteers as there are regular firefighters)
- Able to respond immediately (volunteers acquire the skills and knowledge to respond to disasters through routine education and training)

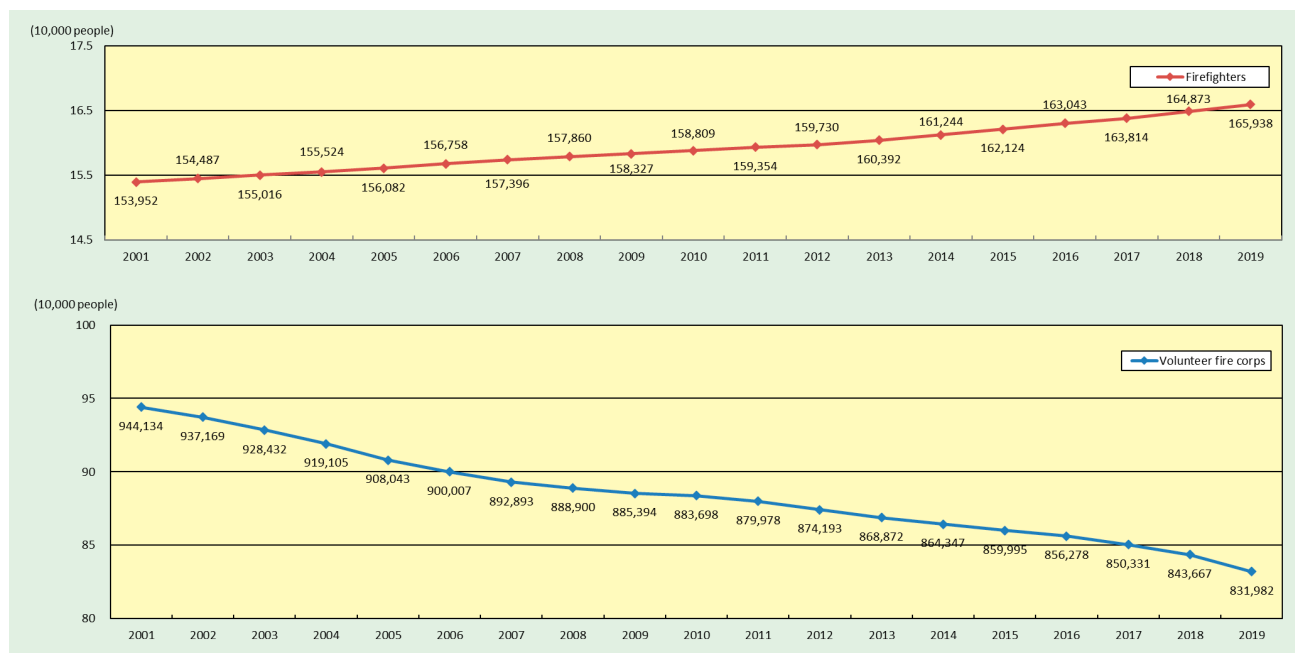
By harnessing these qualities, they are able to engage in the initial firefighting when fires break out and deal with any residual fires, as well as sound warnings and carry out

**Table 2-1-1 Current status of municipal fire defense organizations**

Classification				As of April 1, 2018	As of April 1, 2019	Comparison	
						Change	Rate of change (%)
Fire departments	Fire departments			728	726	△ 2	△ 0.3
	Breakdown	Individual	Cities	387	385	△ 2	△ 0.5
			Towns/villages	52	52	0	0.0
		Special district authorities, etc.		289	389	100	34.6
	Fire station			1,719	1,719	0	0.0
	Branch offices			3,117	3,113	△ 4	△ 0.1
	No. of firefighters			164,873	165,438	565	0.3
		Of which, No. of female firefighters			5,069	5,307	238
Volunteer fire corps	Volunteer fire corps			2,209	2,198	△ 11	△ 0.5
	Divisions			22,422	22,388	△ 34	△ 0.2
	No. of volunteer fire corps members			843,667	831,982	△ 11,685	△ 1.4
		Of which, No. of member			25,981	26,625	644

(Note) Prepared based on the Survey of “The Current Status of Fire Prevention” and “Earthquake Countermeasures” and “The Report on Personnel Changes concerning Fire Departments and Volunteer Fire Corps”.

Fig. 2-1-1 Trends in the number of Firefighters and Volunteer Fire Corps



- (Notes)
- 1 Prepared based on "The Survey of the Current Status of Fire Prevention and Earthquake Countermeasures".
  - 2 Due to the effects of the Great East Japan Earthquake, the number of firefighters and volunteer firefighters in Iwate Prefecture, Miyagi Prefecture, and Fukushima Prefecture in 2011 were tabulated using the numbers from the previous year (as of April 1, 2010).
  - 3 Due to the effects of the Great East Japan Earthquake, the numbers for Onagawa Town, Oshika District, Miyagi Prefecture in 2012 were tabulated using the numbers from the previous year (as of April 1, 2010).

Fig. 2-1-2 Breakdown of the establishment method for fire departments

(As of April 1, 2019)

No. of fire departments		Municipalities				Standing/non-standing				
		Cities	Towns	Villages						
726		1,690 municipalities		1,690	793	736	161	Municipalities with standing structures		
Individual	437	437 municipalities		437	385	51	1	Individual	Establishment method	
Special district authorities, etc.	289	1,110 municipalities		1,110	371	599	140	Comprised of special district authorities, etc.		
		143 municipalities		143	37	86	20	Outsourced		
				29	—	7	22	Municipalities with non-standing structures		
				1,719	793	743	183	Total		

- (Notes)
- 1 Prepared based on "The Report on Personnel Changes concerning Fire Departments and Volunteer Fire Corps".
  - 2 The 23 wards of Tokyo were tabulated as a single city for individual fire defense departments.
  - 3 Extended associations are included under "Special district authorities."

rescue activities when storm and flood disasters occur. In addition, when large-scale disasters occur, they engage in activities like assisting with resident evacuations and safeguarding against disasters, as well as giving instructions to evacuated residents in cases where they safeguard civilians. Volunteer fire corps play a major role in ensuring the safety and security of their communities, such as by overseeing fire defense activities in an across-the-board manner.

This is particularly true in towns and villages without a standing fire defense structure, where fire departments and fire stations have not been established. What is more, the volunteer fire corps engage in activities that are rooted in local communities during times of normalcy, such as raising awareness of fire prevention and disseminating first-aid treatment. They also play a major role in improving local fire prevention capabilities and revitalizing local communities.

## 2. Fire and Disaster Defense Facilities

### (1) Maintenance of Fire Trucks and Other Equipment

Fire departments and fire stations are equipped with the fire pump vehicles, ladder-equipped vehicles (including vehicles with folding ladders), chemical fire trucks, ambulances, rescue vehicles, fire prevention helicopters, and other equipment that they need for their firefighting activities.

In addition, volunteer fire corps are equipped with vehicles such as fire pump vehicles, small power pump transport vehicles, and transport vehicles for rescue supplies. (Table 2-1-2)

### (2) Fire Defense Communication Equipment

In order to minimize the damage from fires and other disasters, it is important to quickly become aware of

**Table 2-1-2 Number of firefighting vehicles owned**

(As of April 1, 2019) (Units: vehicles, ships, machines)

Category		Fire departments	Volunteer fire corps	Total
Fire pump vehicles		7,749	14,065	21,814
Ladder-equipped vehicles		1,146	0	1,146
Chemical fire trucks		951	4	955
Ambulances		6,364	0	6,364
Command vehicles		1,772	903	2,675
Rescue vehicles		1,243	0	1,243
Other firefighting vehicles		8,990	2,041	11,031
Small power pumps		3,563	50,420	53,983
Breakdown	Equipped on vehicles	429	35,735	36,164
	Equipped on wheeled platforms	1,844	2,680	4,524
	Other than those above	1,290	12,005	13,295
Firefighting boats		39	9	48
Fire and disaster prevention helicopters		33	0	33

(Note) Prepared based on “The Survey of the Current Status of Fire Prevention and Earthquake Countermeasures”, “The Survey on the Implementation Status of Emergency Services”, and “The Survey on the Implementation Status of Rescue Work”.

said fires and disasters and have firefighting agencies rapidly arrive at the scene. In addition, it is also important to collect information and quickly and clearly issue instructions and orders at the scene of the incident. Fire defense communication equipment plays an enormous role in such contexts. Such equipment includes dedicated phone lines for reporting fires, fire defense communication networks, and more.

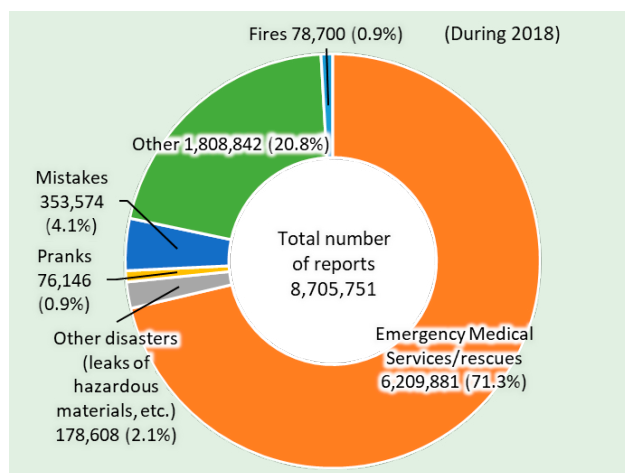
#### A. Calls to 119

Dedicated phone lines for reporting fires refer to dedicated phone lines whereby firefighting agencies can receive emergency reports related to fires and medical emergencies from people providing notification.

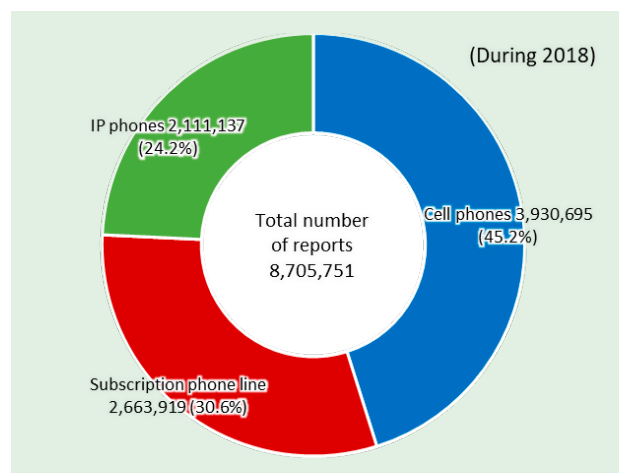
The telecommunication number related to emergency reports to firefighting agencies has been set as “119” as per regulations on telecommunication numbers.

The number of incidents reported to 119 throughout 2018 came to 8,705,751. A breakdown of the reported details shows that the number of reported cases related to medical emergencies and rescues accounted for 71.3% of the total. (Fig. 2-1-3)

Following the recent popularization of cell phones and IP phones\*<sup>1</sup> (hereafter referred to as “cell and other types of phones”), the number of reports to 119 from cell and other types of phones have risen, with their share versus the total number of reports coming to 45.2% and 24.2%, respectively. (Fig. 2-1-4)

**Fig. 2-1-3 Number of reports to 119 (by the reported details)**

(Note) Prepared based on “The Survey of the Current Status of Fire Prevention and Earthquake Countermeasures”.

**Fig. 2-1-4 Number of reports to 119 (by type of connection)**

(Note) Prepared based on “The Survey of the Current Status of Fire Prevention and Earthquake Countermeasures”.

\*1 IP (Internet Protocol) phones: A voice call service offered through the use of IP technology at the contact point between the telephone network and the phone terminals.

**(A) Location Information Notifications for Emergency Reports to 119**

The firefighting agencies that receive reports from 119 hear out the status at the scene of the disaster and information on the disaster through their back-and-forth with the person providing notification. Firefighting agencies that have adopted advanced fire defense command centers can display location information such as the reported location on a map over a monitor when they receive reports to 119.

The Location Information Notification System, which notifies firefighting agencies of the location information from the scenes where calls to 119 originate from cell phones and other sources, began operating in April 2007. The Integrated Location Information Notification System, which integrates this Location Information Notification System with the New Origin Location Display System<sup>\*2</sup> that had been operating since before to provide notifications from landline phones, began operating in October 2009.

As of April 1, 2019, the number of fire departments that are now able to determine the location information when they receive 119 reports from cell and other types of phones is now 712 (of which 596 headquarters use the Integrated Location Information Notification System) as a result of the Location Information Notification System and Integrated Location Information Notification System.

**(B) Nonverbal Reports**

When persons with hearing or speech impairments make 119 emergency calls without using voice, they are accommodated via alternative, nonverbal means through the use of FAX or email. However, there are a number of problems with these sorts of alternative means, such as the fact that in some cases reports can only be provided from locations equipped with FAX machines, and that it takes time to convey the address and status of the person providing the report.

Therefore, the FDMA had held meetings about “Net 119 Emergency Report System”, which allows persons with hearing or speech impairments to provide reports through the tapping or swiping the screen of smartphones since 2015. In FY2017, the committee compiled together standard specifications for a system that should be adopted by fire departments throughout Japan in the future.

When the system is introduced in accordance with the standard specifications, the location of the emergency report will be transmitted directly to the fire department with jurisdiction based on the GPS and other location information of the smartphone, so that even those with hearing or speech impairments will be able to call 119 smoothly.

The FDMA is working toward the goal of adopting this system at all fire departments by 2020, when the Tokyo Olympic and Paralympic Games will be held.

In addition, sign language and written language have been proposed as means for the hearing or speech impaired to call 119.

The Nippon Foundation has been implementing a model project for a “telephone relay service” in which

an operator interprets from “sign language” or “text” to “voice” to provide an immediate two-way connection between hearing or speech impaired person and non-hearing or speech impaired people. The Ministry of Internal Affairs and Communications and the Ministry of Health, Labor and Welfare held a working group on telephone relay services to study the realization of telephone relay services as a public infrastructure, and published a report in December 2019.

The FDMA is also participating in the study to create circumstances where emergency calls can be made through telephone relay services.

**(C) Report from foreign nationals**

As the number of foreign visitors to Japan is expected to increase further in preparation for the 2020 Tokyo Olympic and Paralympic Games, there is an urgent need to respond to 119 calls from foreign nationals.

The 119 multi-language service using 3 Way Telephone Interpretation provided by the Telephone Interpretation Center will be available 24/7 in major languages to respond promptly and accurately when calling 119 from a foreign national or at an emergency site where a foreign national is present. The FDMA is working toward the goal of having this system installed in all fire departments in 2020.

**B. Fire Defense Communications Networks**

Fire and emergency radios are an important piece of equipment. They are considered necessary for situations where a fire department needs to provide instructions to fire brigades, rescue crews, and others who are active at the scenes of disasters, or for situations where orders are to be given and information collected at the scenes of fires. What is more, fire defense phone lines are dedicated phone lines that are used for communications such as simultaneously relaying information and orders when reports are received between fire departments, fire stations, and branch offices.

On the other hand, the image information recorded by the cameras equipped on fire prevention helicopters are used nationwide and in local regions through the use of satellite communication networks.

**(3) Water Sources for Firefighting**

Water sources for firefighting are an absolutely crucial component, together with fire trucks and other equipment, when it comes to carrying out firefighting activities. Generally speaking, these are categorized into artificial sources like fire hydrants and fire cisterns, as well as natural sources like rivers, ponds, oceans, and lakes.

With artificial sources, a certain amount of water can be drawn up at any time from near the location where the fire breaks out, and so they are frequently used as water sources for firefighting during such activities. Ever since the Great Hanshin-Awaji Earthquake in particular, the installation of fire cisterns and other equipment that has been seismically-reinforced against earthquakes has been actively promoted as a countermeasure for water sources for firefighting to combat large-scale earthquakes. In 2014

<sup>\*2</sup> New Origin Location Display System: This is a system that notifies fire departments of the location information (address information) of the person making a report with regards to 119 reports from Nippon Telegraph and Telephone East Corporation and Nippon Telegraph and Telephone West Corporation landline phones.



**Table 2-1-3 Number of water sources for firefighting installed (mainly artificial water sources)**

(As of April 1 of each year)

Category	2018	2019	Comparison	
			Difference	Percent change(%)
No. installed nationwide	2,470,022 (100.0)	2,483,960 (100.0)	13,938	0.6
Fire hydrants	1,919,018 (77.7)	1,930,125 (77.7)	11,107	0.6
Fire cistern	531,057 (21.5)	534,345 (21.5)	3,288	0.6
20m-less than 40 m	103,487	103,166	△ 321	△ 0.3
40m-less than 60 m	381,669	384,700	3,031	0.8
60 m or more	45,901	46,479	578	1.3
Wells	19,947 (0.8)	19,490 (0.8)	△ 457	△ 2.3

(Notes) 1 Prepared based on "The Survey of the Current Status of Fire Prevention and Earthquake Countermeasures".

2 The numbers in parentheses show the proportion, and their unit is %.

the Standards for Water Sources for Firefighting (the FDMA Bulletin No. 7 from 1964) were revised to allow for their installation in a systematic manner. (Table 2-1-3)

In recent years, in addition to the aforementioned concerns about seismic performance, due to concerns about the aging of firefighting water source system, the demand for new fire protection systems in densely populated wooden buildings, etc., by the Notice "Reinforcement of firefighting water source Maintenance Promotion" (Issue No. 272, Fire and Ambulance Division's Manager, the FDMA on November 24, 2017) Municipalities are trying to promote the improvement by setting numerical targets for short-term, medium-term, and long-term for the

maintenance of firefighting water source).

What is more, with natural water sources it is often the case that water can be taken in over a long period of time without any restrictions on the amount that can be taken. As such, these sources play an important role as a water source for firefighting together with artificial water sources. The other side of the coin is that there are sometimes cases where these water sources cannot be used due to the season, or where restrictions are placed on where the water can be drawn from or the like. Therefore, an appropriate combination of both artificial and natural water sources must be established when it comes to setting in place water sources for firefighting.

—omitted—

# Section 4

## Education and Training Structure

📖 Japanese Original P.204

### 1. Education and Training for Firefighters

It is essential to improve the knowledge and skills of firefighters to enable them to appropriately handle the increasingly diverse disaster and emergency services and increasing sophistication of fire prevention services. As such, education and training for firefighters is incredibly important.

Education and training for firefighters is offered by each fire departments, fire stations, and volunteer fire corps, as well as by the national government through the Fire and Disaster Management College and the fire academies in the various prefectures. In addition to these, there are also emergency medical technician (EMT) training institutes that offer education designed to have rescue workers from around the country acquire national qualifications as EMTs.

As this indicates, the national government, prefectures, municipalities, and others each undertake their own respective functions as they work together in a cooperative manner to provide education and training for firefighters.

### 2. On-the-job Training

Every firefighting agency carries out systematic education and training (on-the-job training) based on their respective regional characteristics on a routine basis. In particular, those firefighters who are required to perform rigorous team activities based on instructions and orders at the scenes of dangerous disasters require a sense of duty and abundance of energy and vigor in order to carry out their professional duties. Therefore, fire departments work to improve their knowledge and skills and lift their morale through various types of education and training.

The firefighting agencies work to promote training activities that are safe and effective. This is done through efforts like the establishment of standards for on-the-job training at the FDMA in the form of the Standards for Fire Development Training Etiquette, Standards for Firefighting Techniques, and Standards for Fire and Rescue Techniques, as well as safety management manuals both for during drills and during security activities.

### 3. Education and Training at Fire Academies

#### (1) Establishment of Fire Academies

The provisions of Article 51 of the Fire Organization Act mandate that prefectures must establish fire academies independently or jointly, except in cases where financial circumstances or other special circumstances prevent them from doing so. In addition, the provisions stipulate that ordinance-designated cities can also establish fire academies independently or jointly together with the prefectures.

As of April 1, 2019, fire academies had been established in all 47 prefectures, seven ordinance-designated cities (Sapporo, Chiba, Yokohama, Nagoya, Kyoto, Kobe, and Fukuoka), and in the Tokyo Fire Department for a total of 55 such academies throughout Japan (in the Tokyo Metropolitan Region, there are two schools that have been jointly established: The Tokyo Metropolitan Fire Defense Training Center and the Tokyo Fire Department's Fire Academy).

The FDMA has established the Standards for the Establishment, Personnel, and Operation of Fire Academies with the objective being to work to establish and run fire academies. It also makes progress in ensuring and improving the level of education and training at the fire academies.

#### (2) Types of Education and Training

The Education and Training Standards for Fire Academies (hereafter referred to as “standards”) have been established to serve as standards for the education and training offered at fire academies. The fire academies formulate specific curricula out of respect for the “Attainment objectives” stipulated in the standards and by using the “Standard subjects and class hours” found therein as reference guidelines. The types of education and training offered include initial education, specialized education, management education, and special education for firefighters, as well as basic education, specialized education, management education, and special education for volunteer firefighters.

- Initial education refers to foundational education and training offered to all newly-hired firefighters. The standards designate that 800 hours of class time is required for this.
- Basic education refers to basic education and training offered to those people who must acquire knowledge and skills as volunteer firefighters after joining a volunteer fire corps due to their limited experience. The standards designate that 24 hours of class time is required for this.
- Specialized education refers to expert education and training related to specific fields offered to active duty firefighters and mainly those volunteer firefighters who have completed their basic education.
- Management education refers to the education and training that is generally required for fire defense management, and is offered to management personnel and prospective candidates expected to advance onto management.
- Special education refers to education offered for special objectives that fall outside the bounds of the education and training mentioned above.

#### (3) Enhancing and Strengthening the Education and Training at Fire Academies

Sophisticated firefighting activities are required due to the increasing size and complexity of disasters. In addition, prevention work also continues to grow

increasingly sophisticated and specialized as a result of revisions to fire defense laws and ordinances.

Against this background, the knowledge and skills that firefighters need in order to properly carry out their professional duties must be further improved upon. Therefore, partial revisions were made to both the Standards for the Establishment, Personnel, and Operation of Fire Academies and the Education and Training Standards for Fire Academies in March 2015 with the goal of working to enhance and strengthen the education and training offered at fire academies.

As part of the revisions, facilities capable of holding practical training by simulating actual disasters (simulated firefighting training equipment, earthquake training facilities, etc.) were added as facilities that should be set in place as standard practice. In addition, the method for calculating the number of teaching personnel at fire academies was revised out of consideration for safety management aspects, and revisions were also carried out regarding the proper allocation of class subjects and class hours based on the challenges of and need for fire defense.

#### (4) Holding of Education and Training

In FY2018 a total of 32,044 firefighters attended education and training at fire academies. (Table 2-4-1)

As for volunteer firefighters, in FY2018 a total of 37,470 attended education and training either at fire academies or through the dispatch of teachers from said academies. (Table 2-4-2)

Since volunteer firefighters each have their own main occupations, in cases where it is determined that it will be difficult to adequately provide them with education and training at a fire academy, it has been stipulated that teachers from said academies can be dispatched locally to provide education and training. Many of the fire academies have adopted this approach.

What is more, education and training is also provided by fire academies to people other than volunteer fire corps members to the extent that doing so does not interfere with the education and training of said members. In FY2018, education and training were provided to a total

**Table 2-4-1 Holding of education and training aimed at firefighters**

(people)

	FY2017	FY2018
Initial education	5,386	5,364
Specialized education	10,244	10,017
Fire Suppression Class	940	1,201
Special Disaster Class	699	704
Preventive Inspection Class	1,003	1,112
Hazardous Material Class	496	447
Fire Inspection Class	1,326	1,130
Ambulance Class	4,096	3,748
Associate Ambulance Class	8	—
Rescue Class	1,676	1,675
Management education	3,182	3,835
Introductory Management Class	1,950	2,301
Intermediate Management Class	893	1,131
Advanced Management Class	339	403
Special education	12,179	12,828
<b>Total</b>	<b>30,991</b>	<b>32,044</b>

(Note) Prepared based on "The Survey on Education and Training at Fire Academies".

of 17,275 people, from local voluntary disaster prevention organizations and others.

### 4. Education and Training and Technical Assistance at the Fire and Disaster Management College

The Fire and Disaster Management College provides the advanced education and training needed for management to the personnel engaged in firefighting operations at the national and prefectural level, as well as to municipal volunteer fire corps members. In addition, it also provides the necessary technical assistance related to education and training for fire academies at the prefectural level.

#### (1) Facilities and Equipment

The Fire and Disaster Management College's education

**Table 2-4-2 Holding of education and training aimed at volunteer firefighters**

(people)

Category	FY2018		
	School education	Teacher dispatch	Total
Basic education	3,925	3,983	7,908
Specialized education	2,121	0	2,121
Fire Suppression Class	847	0	847
Machinery Operation Class	1,274	0	1,274
Management education	7,421	106	7,527
Introductory Management Class	1,999	82	2,081
Supervisory Management Class (Whole)	751	0	751
Branch Supervisor Course	2,206	24	2,230
Local command Course	2,465	0	2,465
Special education	8,527	11,387	19,914
<b>Total</b>	<b>21,994</b>	<b>15,476</b>	<b>37,470</b>

(Note) Prepared based on "The Survey on Education and Training at Fire Academies".

\* The Intermediate Management Class was replaced with the Supervisory Management Class through the partial revisions to the education and training standards for fire academies from March 2014.

\* The Supervisory Management Class was counted as having completed the Branch Supervisor Course and the Local Command Course.

and training facilities consist of a main building, a secondary building, training facilities, and a dormitory.

The main building contains a large classroom that can accommodate 250 people, three regular classrooms, an audiovisual classroom, a scientific combustion laboratory, and a library. In addition, it also contains disaster response training rooms and other facilities for fostering trainees with the ability to it has been equipped with dedicated facilities for women, assess situations and give commands as leaders by experiencing a variety of simulated disaster scenarios.

The secondary building contains an auditorium that can accommodate 300 people, as well as rescue training rooms, special classrooms, an indoor training ground, and more.

The training facilities consist of a 4-story low-rise training building and an 11-story high-rise training tower. In addition, these also include a training facility where trainees can experience the same changes in the environment as an actual fire scene through the burning wood in a container.

The dormitory has a south wing that can accommodate 172 people and a north wing that can accommodate 52. In addition, it has been equipped with dedicated facilities for women, including the bathrooms, restrooms, changing rooms, and lounges women need for dormitory life.

As for education and training vehicles, the college is equipped with command vehicles, ordinary pump vehicles, pump vehicles equipped with water tanks, rescue

work vehicles, special disaster response chemical vehicles, disaster support vehicles, and high-grade emergency vehicles.

### (2) Holding of Education and Training

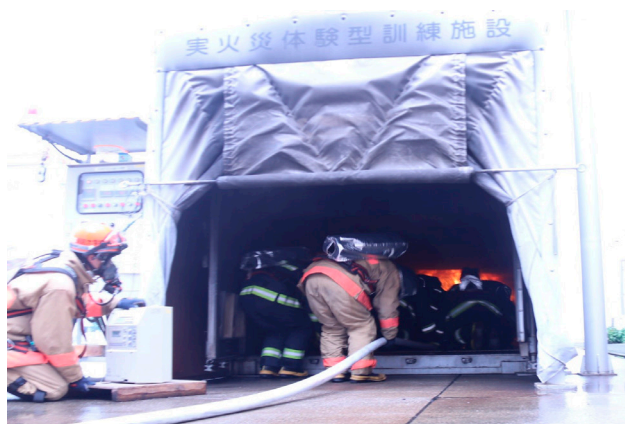
The Fire and Disaster Management College turned out 1,082 graduates from its comprehensive classes and specialized classes, and 635 graduates from its practical courses in FY2018. This brings the total number of its graduates from the time it was founded up through FY2018 to 62,695.

What is more, its capacity numbered 1,932 people in FY2019. (Table 2-4-3)

The college's classes were substantially reorganized in FY2006, following which reviews have been carried out where appropriate based on the needs of the attendees. As a result, in FY2018, 22 classes and 13 practical courses were held throughout the year.

Regarding the contents of the education and training for each course (lesson subjects), harassment prevention, mental health, coping with critical incident stress, crisis management, public relations, and handling litigation have been incorporated as subjects designed to cope with the new challenges that have arisen as a result of changes in social conditions according to the objectives of each class.

What is more, efforts are being made to round-out the contents of the curriculum, such as by adding in training that simulates commanding during a fire, simulation training for receiving assistance during a large-scale



Training that simulates the experience of being in an actual fire (hot fire training)



Training that simulates the experience of being in an actual fire (hazardous material fire)



Drill on responding to mass casualties



Table 2-4-3 Education and training implementation status

Category		FY2018 (actual performance)		FY2019 (planned)			
		No. of times held (times)	Graduates (people)	No. of times held (times)	Capacity (people)	Time	Educational goals
Classes	Comprehensive education						
	Management Class	4	285	4	240	2 months	To foster human resources suitable for becoming senior firefighting management by having them learn advanced knowledge and skills related to firefighting in a comprehensive manner.
	Advanced Management Class	1	41	1	54	2 weeks	To improve the qualifications of people currently serving as senior firefighting management by having them learn advanced knowledge and skills related to firefighting in a comprehensive manner.
	New Fire Chief/Principal Orientation Class	2	41	2	102	2 weeks	To have newly-appointed fire chiefs and fire academy principles learn the knowledge and skills they will need for their positions in a comprehensive manner.
	Volunteer Fire Corps Management Class	2	66	2	72	1 week	To have senior management at volunteer fire corps learn the knowledge and skills they will need for their positions in a comprehensive manner.
	Specialized education						
	Guard Class	2	120	2	120	2 months	To improve the qualifications of educational instructors on guard duty by having them learn advanced knowledge and skills related to guard duty in a specialized manner.
	Rescue Class	2	119	2	120	2 months	To improve the qualifications of educational instructors on rescue duty by having them learn advanced knowledge and skills related to rescue duty in a specialized manner.
	Emergency Medical Service Class	1	48	1	48	1 month	To improve the qualifications of rescue work instructors by having emergency rescue team leaders and others acquire advanced knowledge and skills in a comprehensive manner (including education for fostering EMTs to offer instruction).
	Prevention Class	2	95	2	96	2 months	To improve the qualifications of educational instructors on prevention by having them learn advanced knowledge and skills related to prevention in a specialized manner.
	Hazardous Substances Class	1	42	1	42	1 month	To improve the qualifications of educational instructors on hazardous material safety by having them learn advanced knowledge and skills related to hazardous material safety in a specialized manner.
	Fire Survey Class	2	96	2	96	2 months	To improve the qualifications of educational instructors on fire survey work by having them learn advanced knowledge and skills related to fire survey work in a specialized manner.
	New Teacher Orientation Class	1	66	1	60	2 weeks	To have newly-appointed personnel in charge of education and training at fire academies learn the knowledge and skills they will need for their positions in a comprehensive manner.
	In-service teachers	2	63	2	72	1 week	This improves the skills of the in-service teaching personnel in charge of providing education and training at fire academies and the like to enable them to provide comprehensive instruction on operational management planning, preventative operations, and security operations.
	Subtotal	22	1,082	22	1,122		
	Emergency Fire Response						
	Commanding Officer Course	2	75	2	96	2 weeks	To have the command support leaders of Emergency Fire Response Teams learn the knowledge and skills they will need for their work.
	Advanced Rescue/Special Advanced Rescue Course	1	66	1	66	2 weeks	To have the leaders of advanced rescue teams and special advanced rescue teams learn the knowledge and skills they will need for their work.
	NBC Course	1	72	1	72	3 weeks	To have NBC disaster personnel on Emergency Fire Response Teams learn the knowledge and skills they will need for NBC disaster response duties.
	Air Corps Officer Course	1	63	1	84	2 weeks	To have firefighting and fire defense air patrol commanders learn the knowledge and skills they will need for their work.
Practical courses	Crisis management/firefighting education						
	Crisis Management/Public Protection Course	1	59	1	96	1 week	To have crisis managers, fire defense managers, and those in charge of protecting the public at local public bodies learn the knowledge and skills they will need for their work.
	Voluntary Disaster Prevention Organization Training Course	1	63	1	72	1 week	To have those in charge of training at voluntary disaster prevention organizations learn the knowledge and skills they will need for their work.
	Short-term Voluntary Disaster Prevention Organization Training Course	2	95	2	128	2 days	To have the personnel in charge of the task of training voluntary disaster prevention organizations learn the basic knowledge and skills they will need for their work.
	Volunteer Fire Corps Revitalization Course	1	34	2	96	1 week	To have those involved in volunteer fire corps duties and education/training learn the knowledge and skills they will need for their work.
	Courses encouraging the active involvement of women	1	60	1	52	2 weeks	To support the career development of female firefighting officials who are candidates for management positions and have them learn knowledge and skills with the goal of expanding their career opportunities.
	Inspection operations management course	1	48	1	48	1 week	This instills persons at or above the section head-level who supervise preventive operations at fire departments with the knowledge and skills needed in order to perform management for inspection operations as a whole, such as handling violations.
Subtotal		12	635	13	810		
Total		34	1,717	35	1,932		



earthquake, and other such drills that make use of information systems. Other examples of this include drills on firefighting activities in environments that are similar to those of an actual fire through the use of training facilities that simulate the experience of being in an actual fire (hot training).

Moreover, some of the classes incorporate advance learning over the internet (e-learning) in an effort to provide efficient education and training within a limited period of time.

And to support the career development of female firefighting officials, the framework for giving priority to female firefighting officials by reserving 5% of the enrollment slots for each class has been established for women to encourage their matriculation. The practical course promoting the active involvement of women was held with the main objective of supporting the career development of female firefighting officials in an effort to expand training opportunities for women and the Fire and Disaster Management College Forum with the theme of promoting the active involvement of women was also held.

Furthermore, for the holding of large-scale international events (such as the 2020 Tokyo Olympic and Paralympic Games), the FDMA has increased the number of days of education for its NBC Course from 10 to 15 up through FY2020, when the Olympics was held, to contribute to enhancing NBC disaster response capabilities.

In FY2018, with the aim of improving on-site command and decision making capabilities in the event of fire in a densely wooded houses area or other difficult to firefight area, the Fire and Disaster Management College is incorporating the training using town-formed condominium unit that can conduct practical training.

### (3) Technical Assistance for Fire Academies

The education and training provided at prefectural fire academies must be enhanced and strengthened owing to the increasing diversity and growing scale of the situations resulting from natural disasters, fires, and accidents. The Fire and Disaster Management College provides the following sorts of technical assistance in order to achieve this.

#### A. Education and Training for Fire Academy Principals and Teachers

Education and training for newly-appointed fire academy principals and teachers is provided via classes

for newly-appointed fire chiefs and school principals, as well as classes for newly-appointed teachers, respectively.

What is more, the classes for newly-appointed teachers and in-service teachers provide education centered mainly around learning teaching techniques. In addition, they also incorporate practices in which the teachers actually give lectures, and provide training for educational leaders at the fire academies.

The classes for people other than newly-appointed teachers and in-service teachers also strive to foster educational leaders as one of their objectives, and offer learning on teaching techniques and practice with giving lectures as part of this.

#### B. Dispatch of Lecturers

Lecturers on fire suppression duty, prevention, ambulance service, rescue, and other forms of fire service administration and firefighting techniques are dispatched in response to requests from fire academies in order to enhance the educational content at said academies. Lecturers were dispatched a total of 131 times in FY2018.

#### C. Editing Firefighting Textbooks

The FDMA edits the textbooks for beginners that are used at the fire academies. As of April 2019, it had issued 21 types of textbooks.

#### D. Providing Information on Lecturers, etc.

The FDMA provides a roster of the names of graduates from the Fire and Disaster Management College, information on lecturers, and more. This is designed to secure lecturers who have acquired a certain level of knowledge and skills in specialized areas, as well as to contribute to further improving the quality of the education and training offered by the fire academies.

### (4) Special Lectures

The FDMA is planning special lectures in anticipation for the Rugby World Cup 2019 and the 2020 Tokyo Olympic and Paralympic Games to be held for four years in the prefectures where the venues for these events are located at 16 sites. In FY2019, special lectures on topics like safety management, responding to mass casualties, and NBC responses were held at four locations in Miyagi, Fukushima, Ibaraki and Chiba Prefecture.

# Section 5

## Ambulance Service System

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### 1. Implementation of Ambulance Services

#### (1) Ambulance Service Dispatch

The number of times ambulance service dispatch were sent out via ambulances nationwide in 2018 came to 6,605,213 (an increase of 263,066, or 4.1%, from the previous year). This has consistently continued to trend upward since the year 2004, when the number of cases exceeded 5 million for the first time. The number of times ambulance service dispatches were sent out taken as a daily average is approximately 18,096 (an increase of 720 from the previous year), meaning that ambulance service teams were dispatched at a rate of once every 4.8 seconds or so (this was 5.0 seconds in the previous year).

What is more, the number of people transported by ambulance has also consistently continued its upward swing, coming to 5,960,295 people (an increase of 224,209 people, or 3.9%, from the previous year). This means that one out of every 21 people of the public has been transported by an ambulance service team (this was one out of every 22 people in the previous year). Looking at this by the type of accident that led people to be transported by an ambulance reveals that 3,891,040 people (65.3%) due to sudden illness 912,346 people

(15.3%) suffered an ordinary injury, 441,582 people (7.4%) suffered a traffic accident, and so on. (Table 2-5-1, Table 2-5-2, Attachment 2-5-1, 2 untranslated)

The number of times fire and disaster prevention helicopters were dispatched came to 3,128 (a decrease of 242 from the previous year), and 2,318 people were transported by them (a decrease of 260 from the previous year).

#### (2) People Transported by the Severity of Their Injury or Illness

Of the 5,960,295 people transported by ambulances in 2018, the majority were people with minor injuries or illnesses that did not require hospitalization (outpatient care) or other cases (cases where a doctor did not provide a diagnosis, etc.). (Table 2-5-3)

#### (3) People Transported by Ambulance by Age Group and Type of Accident

Viewing a breakdown of the 5,960,295 people transported by ambulance in 2018 by age group reveals that 13,317 of them were newborn infants (0.2%), 266,032 were young children (4.5%), 205,897 were youths (3.5%), 1,935,986 were adults (32.5%), and 3,539,063 were elderly people (59.4%). As the aging of society advances, the share accounted for by elderly people will continue to trend upwards year by year (an increase of 0.6%

**Table 2-5-1 Trends in the number of ambulance services and number of people transported**

(During each year)

Category Year	No. of ambulance service dispatch				People transported				Of(A), No. of dispatch due to sudden illness (B)	Ratio of (B) to (A) (%)
	Total No. of ambulance service dispatch	Of which No. via ambulance (A)	Of which No. via fire and disaster prevention helicopter	Difference/rate of change(%) from previous year	Total No. of people transported	Of which No. via ambulance	Of which No. via fire and disaster prevention helicopter	Difference/rate of change (%) from previous year		
2003	4,832,900	4,830,813	2,087	274,951 ( 6.0 )	4,577,403	4,575,325	2,078	245,486 ( 5.7 )	2,819,620	58.4
2004	5,031,464	5,029,108	2,356	198,564 ( 4.1 )	4,745,872	4,743,469	2,403	168,469 ( 3.7 )	2,953,471	58.7
2005	5,280,428	5,277,936	2,492	248,964 ( 4.9 )	4,958,363	4,955,976	2,387	212,491 ( 4.5 )	3,167,046	60.0
2006	5,240,478	5,237,716	2,762	▲39,950 (▲0.8)	4,895,328	4,892,593	2,735	▲63,035 (▲1.3)	3,163,822	60.4
2007	5,293,403	5,290,236	3,167	52,925 ( 1.0 )	4,905,585	4,902,753	2,832	10,257 ( 0.2 )	3,223,990	60.9
2008	5,100,370	5,097,094	3,276	▲193,033 (▲3.6)	4,681,447	4,678,636	2,811	▲224,138 (▲4.6)	3,102,423	60.9
2009	5,125,936	5,122,226	3,710	25,566 ( 0.5 )	4,686,045	4,682,991	3,054	4,598 ( 0.1 )	3,141,882	61.3
2010	5,467,620	5,463,682	3,938	341,684 ( 6.7 )	4,982,512	4,979,537	2,975	296,467 ( 6.3 )	3,389,044	62.0
2011	5,711,102	5,707,655	3,447	243,482 ( 4.5 )	5,185,313	5,182,729	2,584	202,801 ( 4.1 )	3,562,208	62.4
2012	5,805,701	5,802,455	3,246	94,599 ( 1.7 )	5,252,827	5,250,302	2,525	67,514 ( 1.3 )	3,648,074	62.9
2013	5,918,939	5,915,683	3,256	113,238 ( 2.0 )	5,348,623	5,346,087	2,536	95,796 ( 1.8 )	3,732,953	63.1
2014	5,988,377	5,984,921	3,456	69,438 ( 1.2 )	5,408,635	5,405,917	2,718	60,012 ( 1.1 )	3,781,249	63.2
2015	6,058,190	6,054,815	3,375	69,813 ( 1.2 )	5,481,252	5,478,370	2,882	72,617 ( 1.3 )	3,851,978	63.6
2016	6,213,628	6,209,964	3,664	155,438 ( 2.6 )	5,624,034	5,621,218	2,816	142,782 ( 2.6 )	3,975,380	64.0
2017	6,345,517	6,342,147	3,370	131,889 ( 2.1 )	5,738,664	5,736,086	2,578	114,630 ( 2.0 )	4,061,989	64.0
2018	6,608,341	6,605,213	3,128	262,824 ( 4.1 )	5,962,613	5,960,295	2,318	223,949 ( 3.9 )	4,294,924	65.0

(Note) Prepared based on "The Annual Report on Ambulance Service" and "The Survey on the Current Status of Fire and Disaster Prevention and Earthquake Countermeasures".

**Table 2-5-2 Trends in the number of ambulance dispatch by type of accident and the number of people transported**

(During each year)

By type of accident	During 2017		During 2018		YoY	
	No. of dispatch (People transported)	Composition rate (%)	No. of dispatch (People transported)	Composition rate (%)	Difference	Rate of change (%)
Sudden illness	4,061,989 (3,686,438)	64.0 (64.3)	4,294,924 (3,891,040)	65.0 (65.3)	232,935 204,602	5.7 5.6
Traffic accident	481,473 (466,043)	7.6 (8.1)	459,977 (441,582)	7.0 (7.4)	-21,496 -24,461	-4.5 -5.2
Ordinary injury	965,376 (883,375)	15.2 (15.4)	997,804 (912,346)	15.1 (15.3)	32,428 28,971	3.4 3.3
Self-inflicted injury	52,347 (35,377)	0.8 (-0.7)	51,994 (35,156)	0.8 (0.6)	-353 -221	-0.7 -0.6
Work-related injury	53,579 (52,189)	0.8 (0.9)	58,891 (57,500)	0.9 (1.0)	5,312 5,311	9.9 10.2
Assault	33,754 (25,957)	0.5 (0.5)	32,709 (25,038)	0.5 (0.4)	-1,045 -919	-3.1 -3.5
Sports/athletics	42,356 (41,950)	0.7 (0.7)	43,785 (43,349)	0.7 (0.7)	1,429 1,399	3.4 3.3
Fire	23,169 (5,331)	0.4 (0.1)	22,925 (5,393)	0.3 (0.1)	-244 62	-1.1 1.2
Flood	5,060 (2,327)	0.1 (0.0)	5,249 (2,318)	0.1 (0.0)	189 -9	3.7 -0.4
Natural disaster	755 (524)	0.0 (0.0)	2,540 (1,957)	0.0 (0.0)	1,785 1,433	236.4 273.5
Other	622,289 (536,575)	9.8 (9.4)	634,415 (544,616)	9.6 (9.1)	12,126 8,041	1.9 1.5
<b>Total</b>	<b>6,342,147 (5,736,086)</b>	<b>100 (100)</b>	<b>6,605,213 (5,960,295)</b>	<b>100 (100)</b>	<b>263,066 224,209</b>	<b>4.1 3.9</b>

(Notes) 1 Prepared based on "The Annual Report on Ambulance Service".

2 Digits in the second decimal place were rounded off, so in some cases the totals may not be consistent.

**Table 2-5-3 Number of people transported by ambulance by type of accident and severity of their injury / illness**

(During 2018)

Category Type of incident	Death	Serious (Lengthy hospitalization)	Moderate (Hospitalization)	Minor (Outpatient care)	Other	Total
Sudden illness	63,122 (1.6)	292,868 (7.5)	1,640,085 (42.2)	1,893,680 (48.7)	1,285 (0.0)	3,891,040 (100)
Traffic accident	1,871 (0.4)	17,061 (3.9)	88,206 (20.0)	334,124 (75.7)	320 (0.1)	441,582 (100)
Ordinary injury	5,635 (0.6)	57,615 (6.3)	312,755 (34.3)	535,862 (58.7)	479 (0.1)	912,346 (100)
Other	7,511 (1.1)	119,869 (16.8)	440,972 (61.6)	145,880 (20.4)	1,095 (0.2)	715,327 (100)
<b>Total</b>	<b>78,139 (1.3)</b>	<b>487,413 (8.2)</b>	<b>2,482,018 (41.6)</b>	<b>2,909,546 (48.8)</b>	<b>3,179 (0.1)</b>	<b>5,960,295 (100.0)</b>

(Notes) 1 Prepared based on "The Annual Report on Ambulance Service".

2 The severity of injuries or illnesses at the time of the initial medical examination are classified as follows.

(1) Dead: Persons confirmed to be dead at the time of the initial medical examination

(2) Severe condition (lengthy hospitalization): Persons whose injury or illness is so severe that they require hospitalization lasting three weeks or longer

(3) Moderate condition (hospitalization): Persons whose injury or illness are neither severe nor mild

(4) Mild condition (outpatient care): Persons whose injury or illness does not require hospitalization

(5) Other: Persons who have not been diagnosed by a physician, persons for whom the extent of their injury or illness is not clear, or persons who were transported to another location

\* Since the extent of injuries or illnesses are categorized by using the amount of hospitalization required as the criteria, mild condition includes persons who required treatment at a hospital in the early stages and persons who required treatment at a hospital on a regular basis.

3 The numbers in parentheses show the proportion, and their unit is %.

4 Digits in the second decimal place were rounded off, so in some cases the totals may not be consistent.

from the previous year). (Fig. 2-5-1, Attachment 2-5-3 untranslated)

What is more, elderly people accounted for the largest percentage of the people transported by ambulance for sudden illnesses (2,411,050 people, or 62.0%), while the largest percentage transported for traffic accidents consisted of adults (270,309 people, or 61.2%) and the largest percentage for ordinary injuries consisted of elderly people (621,929 people, or 68.2%). (Attachment 2-5-3 untranslated)

#### (4) Time Required to Arrive at the Scene

Looking at a breakdown of the 6,605,213 cases in which ambulances were dispatched in 2018 by the time required to arrive at the scene (time it took to arrive at the scene after the 119 report was received) reveals that in the majority of cases it took between five and ten minutes (4,071,362 cases, or 61.6% of the total). (Fig. 2-5-2)

Moreover, the average time required to arrive at the scene came to 8.7 minutes (8.6 minutes, the previous year), which is 1.0 minutes longer than it was ten years ago (2008). (Fig. 2-5-4)

#### (5) Time Required to Check the Patient into a Hospital

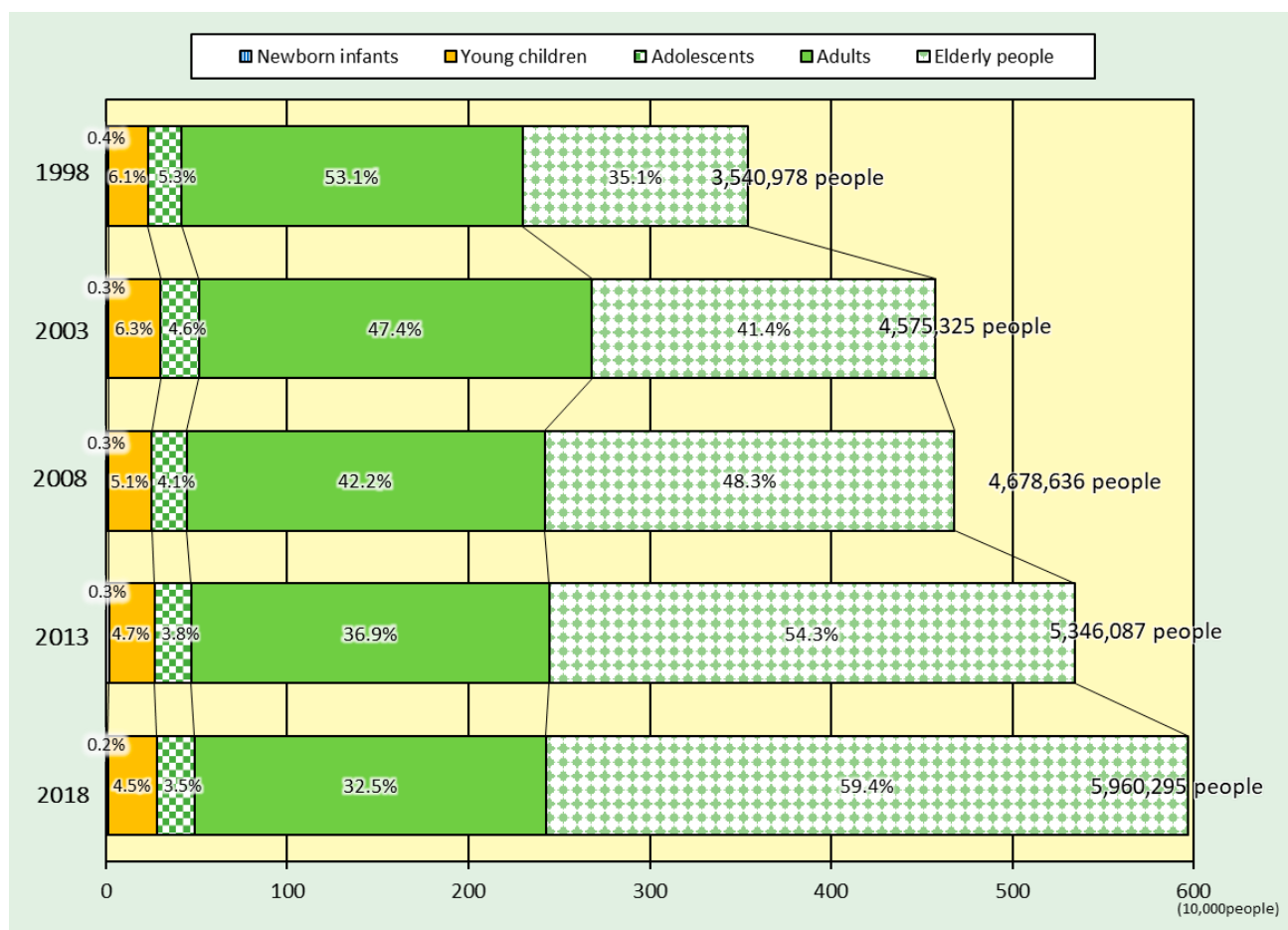
Looking at a breakdown of the 5,960,295 people transported by ambulance in 2018 by the time required to check the patient into a hospital (time required to check the patient into a hospital after the 119 report was received) reveals that the majority of people were checked in between 30 and 60 minutes at 3,757,152 people (63.0%). (Fig. 2-5-3)

In addition, the average time required to check the patient into a hospital came to 39.5 minutes (39.3 minutes, the previous year), which is 4.5 minutes longer than it was ten years ago (2008). (Fig. 2-5-4)

#### (6) First-aid Treatment Administered by Ambulance Team Members

Of the 5,960,295 people transported by ambulances in 2018, ambulance team members administered first-aid treatment to 5,837,390 patients (97.9%). This brings the total number of cases in which ambulance crew members administered first-aid treatment to 22,549,804. (Table 2-5-4)

Fig. 2-5-1 Trends in the composition rate for people transported by age group



(Notes) 1 Prepared based on "The Annual Report on Ambulance Service".

2 The age groups are divided up as follows:

(1) Newborn infants: People who are less than 28 days old

(2) Young children: People between the ages of 28 days and 7 years

(3) Adolescents: People between the ages of 7 and 18 years

(4) Adults: People between the ages of 18 and 65 years

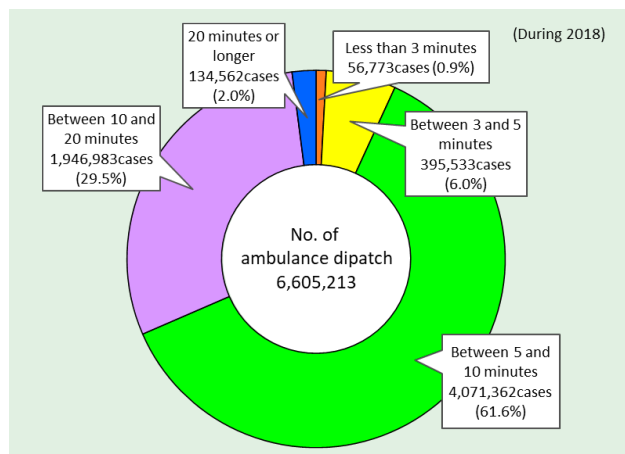
(5) Elderly people: People age 65 or older

3 Digits in the second decimal place were rounded off, so in some cases the totals may not be consistent.

What is more, the total number of cases in which first-aid treatment was administered by ambulance crew members since their expansion in 1991 (items with \* symbol in Table 2-5-4) came to 16,003,545 (a 5.1% increase year-on-year (YoY)). Of these, the number of cases in which EMTs administered first-aid treatment in order to resuscitate a patient (defibrillation\*<sup>1</sup> (including cases administered

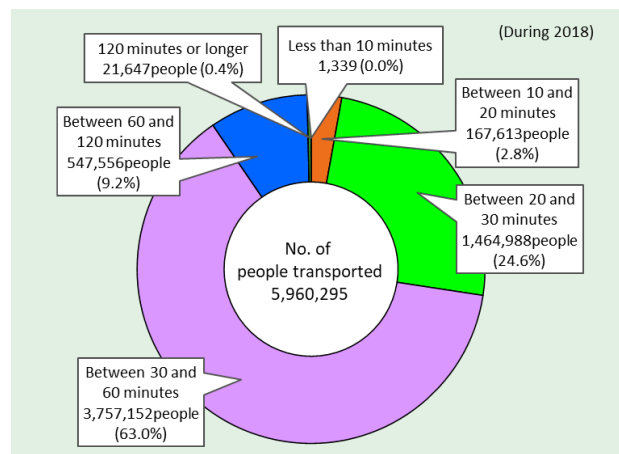
by non-EMT ambulance crews), tracheal intubation,\*<sup>2</sup> ensuring respiratory tracts using laryngeal masks, etc.,\*<sup>3</sup> ensuring intravenous channels,\*<sup>4</sup> drug administration,\*<sup>5</sup> Use of self-injectable adrenaline preparations,\*<sup>6</sup> measuring blood sugar,\*<sup>7</sup> and administration of grape sugar\*<sup>8</sup>) came to 235,749 (an increase of 19,928 from the previous year), which is a roughly 9.2% increase year on year.

**Fig. 2-5-2 No. of dispatch by time required for the ambulance to arrive at the scene**



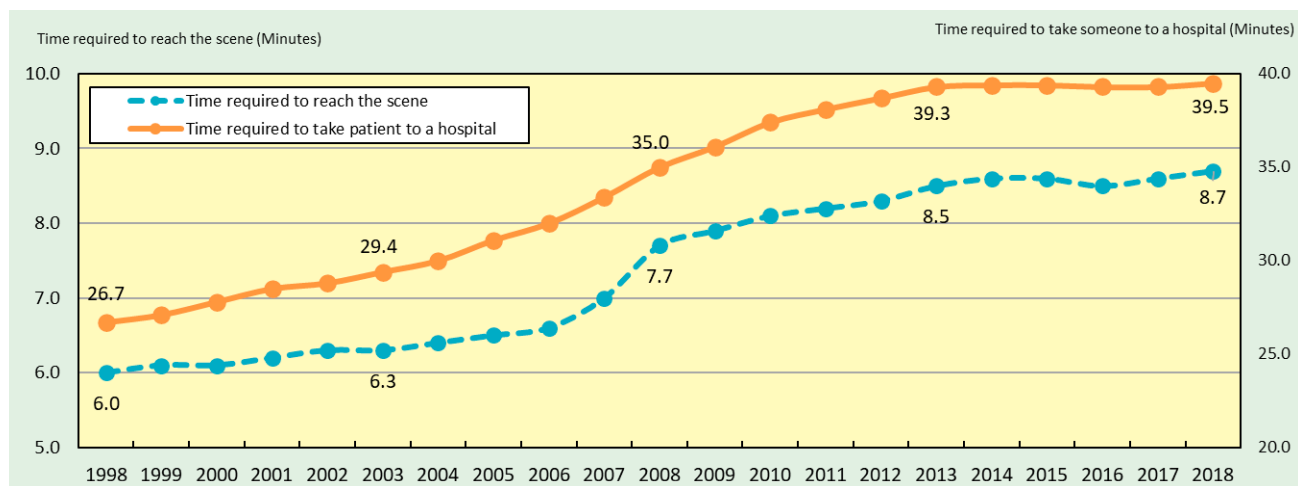
(Notes) 1 Prepared based on "The Accident Reports on Hazardous Materials".  
2 Digits in the second decimal place were rounded off, so in some cases the totals may not be consistent.

**Fig. 2-5-3 No. of people transported by ambulance by time it took to check them into a hospital**



(Notes) 1 Prepared based on "The Accident Reports on Hazardous Materials".  
2 Digits in the second decimal place were rounded off, so in some cases the totals may not be consistent.

**Fig. 2-5-4 Trends in the amount of time it takes ambulances to arrive at the scene and the time it takes to check the patient into a hospital**



(Notes) 1 Prepared based on "The Survey on Emergency Service Implementation Status".  
2 Due to the effects of the Great East Japan Earthquake, the figures were totaled by excluding data from the Kamaishi Ootsuchi District Administrative Office Fire Department and the Rikuzentakata City Fire Department from 2010 and 2011.

\*1 Defibrillation: This refers to the application of electrical shock to lethal arrhythmia (ventricular fibrillation) whereby minor tremors in the heart, such as heart spasms, make it impossible for blood to flow, as a means of dispelling said tremors.

\*2 Tracheal intubation: A process of securing the airway via the larynx with endo tracheal tube.

\*3 Laryngeal mask: This is a type of ventilation tube used to ensure the openness of the respiratory tract. It is fastened in place so as to cover the larynx to ensure open breathing channels.

\*4 Ensuring intravenous channels: A process of securing transfusion channels by inserting needles or tubes intravenously. Ensuring intravenous channels makes it possible to administer medications intravenously right away when they are needed.

\*5 Drug administration: This refers to administering epinephrine (also called adrenaline; simply called "epinephrine" hereafter) under the specific instructions of a doctor.

\*6 Measuring blood sugar: The measurement of blood sugar levels in sick or injured patients with impaired consciousness.

\*7 Administration of grape sugar: This refers to the act of administering grape sugar under the specific instructions of a doctor.

\*8 Use of self-injectable adrenaline preparations: In cases where sick or injured patients whose lives are at risk from anaphylactic shock have been prescribed self-injectable adrenaline formulations in advance, EMTs will administer said adrenaline via self-injectable adrenaline preparations.



Table 2-5-4 First-aid Treatment Administered by Ambulance Team Members

(During 2018)

Type of incident		Sudden illness	Traffic accident	Ordinary injury	Other	Total
No. of people transported who were given first-aid treatment		3,820,761	428,738	888,235	699,656	5,837,390
Items for which first-aid treatment were administered	Stanching bleeding	22,087 (0.1)	20,835 (1.2)	77,563 (2.4)	16,816 (0.6)	137,301 (0.6)
	Covering	26,623 (0.2)	77,540 (4.6)	192,338 (5.9)	37,602 (1.4)	334,103 (1.5)
	Immobilization	41,199 (0.3)	184,495 (11.0)	161,734 (4.9)	46,631 (1.8)	434,059 (1.9)
	Keeping warm	1,076,830 (7.2)	80,902 (4.8)	225,293 (6.9)	175,735 (6.6)	1,558,760 (6.9)
	Oxygen inhalation	792,990 (5.3)	33,022 (2.0)	56,633 (1.7)	192,888 (7.3)	1,075,533 (4.8)
	Artificial respiration	32,730 (0.2)	851 (0.1)	3,395 (0.1)	4,917 (0.2)	41,893 (0.2)
	Pressure on sternum	9,214 (0.1)	296 (0.0)	1,086 (0.0)	1,151 (0.0)	11,747 (0.1)
	Of which, cases involving automatic heart massagers	2,731	53	328	286	3,398
	Cardiopulmonary resuscitation	100,473 (0.7)	2,836 (0.2)	11,180 (0.3)	11,280 (0.4)	125,769 (0.6)
	Of which, cases involving automatic heart massagers	14,097	312	1,662	1,421	17,492
	*Continuation of home medical treatment	38,112 (0.3)	315 (0.0)	3,367 (0.1)	3,734 (0.1)	45,528 (0.2)
	*Medical Anti-shock trousers	43 (0.0)	8 (0.0)	8 (0.0)	10 (0.0)	69 (0.0)
	*Measuring blood pressure	3,509,181 (23.5)	410,322 (24.5)	820,301 (25.0)	641,804 (24.3)	5,381,608 (23.9)
	*Listening for heartbeat/sounds of breathing	1,206,130 (8.1)	132,701 (7.9)	171,813 (5.2)	152,373 (5.8)	1,663,017 (7.4)
	*Measuring blood oxygenation levels	3,612,250 (24.2)	416,322 (24.8)	850,811 (26.0)	668,508 (25.3)	5,547,891 (24.6)
	*ECG measurements	2,337,629 (15.6)	121,823 (7.3)	284,396 (8.7)	344,829 (13.0)	3,088,677 (13.7)
	Ensuring respiratory tracts	163,154 (1.1)	4,560 (0.3)	16,580 (0.5)	19,167 (0.7)	203,461 (0.9)
	Of which, nasal airways	8,077	134	815	1,040	10,066
	Of which, laryngoscope, forceps, etc.	6,326	123	3,131	470	10,050
	Of which, laryngeal mask, etc.	35,534	679	2,819	2,620	41,652
	Of which, tracheal intubation	7,097	153	2,334	868	10,452
	*Defibrillation	11,425 (0.1)	188 (0.0)	526 (0.0)	782 (0.0)	12,921 (0.1)
	*Ensuring intravenous lines	60,009 (0.4)	2,038 (0.1)	5,837 (0.2)	4,633 (0.2)	72,517 (0.3)
	Of which, cases before CPA	20,900	1,218	1,232	1,158	24,508
	Of which, cases after CPA	39,149	826	4,608	3,479	48,062
	*Drug administration	24,887 (0.2)	574 (0.0)	2,850 (0.1)	2,212 (0.1)	30,523 (0.1)
	*Measuring blood sugar	55,703 (0.4)	458 (0.0)	1,388 (0.0)	1,001 (0.0)	58,550 (0.3)
	*Administration of grape sugar	8,731 (0.1)	34 (0.0)	34 (0.0)	57 (0.0)	8,856 (0.0)
	*Self-injectable adrenaline preparation	197 (0.0)	6 (0.0)	40 (0.0)	35 (0.0)	278 (0.0)
	Other treatments	1,821,846 (12.2)	187,090 (11.2)	391,187 (11.9)	316,620 (12.0)	2,716,743 (12.0)
Total		14,951,443 (100)	1,677,216 (100)	3,278,360 (100)	2,642,785 (100)	22,549,804 (100)
Expanded first-aid treatments, etc.		10,938,159	1,086,243	2,152,460	1,826,683	16,003,545

- (Notes) 1 Prepared based on "The Annual Report on Ambulance Service".  
 2 Since there are cases in which several types of first-aid treatment were administered to one person, the totals for the number of people transported who received first-aid treatment and the items on first-aid treatment by type of incident do not align.  
 3 The numbers in parentheses show the proportion, and their unit is %.  
 4 The \* symbol indicates first-aid treatment items that were expanded in 1991.  
 5 Shows the first-aid treatments administered to sick and injured patients transported by ambulance.

Table 2-5-5 Trends in the number of municipalities offering ambulance services

(As of April 1 of each year)

Category	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Group																
No. of municipalities	3,048	2,352	1,784	1,769	1,753	1,742	1,692	1,689	1,685	1,685	1,686	1,689	1,690	1,690	1,690	1,690
Municipal implementation rate (%)	98.3	98.2	98.0	98.0	98.0	98.0	97.9	97.9	98.0	98.0	98.0	98.3	98.3	98.3	98.3	98.3
Population coverage rate (%)	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9

(Note) Prepared based on "The Annual Report on Ambulance Service".

## 2. Implementation Structure for Ambulance Services

### (1) Number of Municipalities Offering Ambulance Services

The number of municipalities offering ambulance services as of April 1, 2019 came to 1,690 municipalities (793 cities, 736 towns, and 161 villages) (the special wards of Tokyo were counted as one city; the same hereafter).

Ambulance services are offered in 98.3% of municipalities (same as last year), and cover 99.9% of the total population (same as last year; the population used is from the 2015 national census; the same hereafter), which means that ambulance services can be received in virtually every region. (Table 2-5-5)

When viewed by the configuration through which said ambulance services were offered, 437 municipalities offered them independently, 143 did so by outsourcing them, and 1,110 did so through special district authorities and extended associations. (Fig. 2-5-5, Attachment 2-5-3 untranslated)

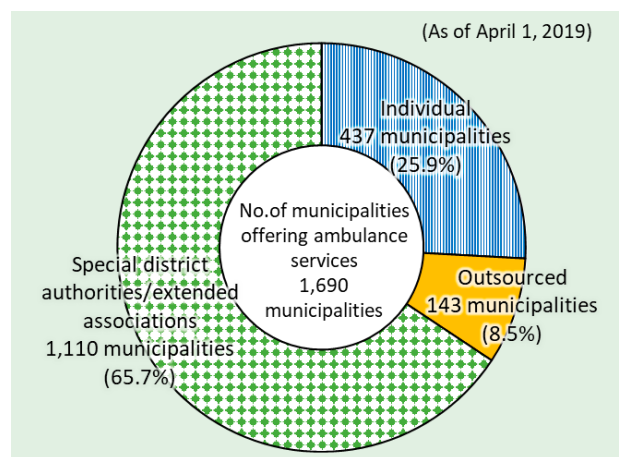
### (2) Number of Ambulance Teams, Ambulance Team Members and Associate Ambulance Team Members

As of April 1, 2019, 5,215 ambulance teams (an increase of 36 YoY) had been established. (Fig. 2-5-6)

Since ambulance team members are engaged in the important duty of saving people's lives, they must complete at least 135 hours' worth of training courses on ambulance services (the former Ambulance I Course).

As of April 1, 2019, the number of firefighters who fulfilled this eligibility requirement came to 127,622 (an increase of 3,193 YoY). Of these, 63,723 were

**Fig. 2-5-5 Breakdown of the configurations by which ambulance services are offered**

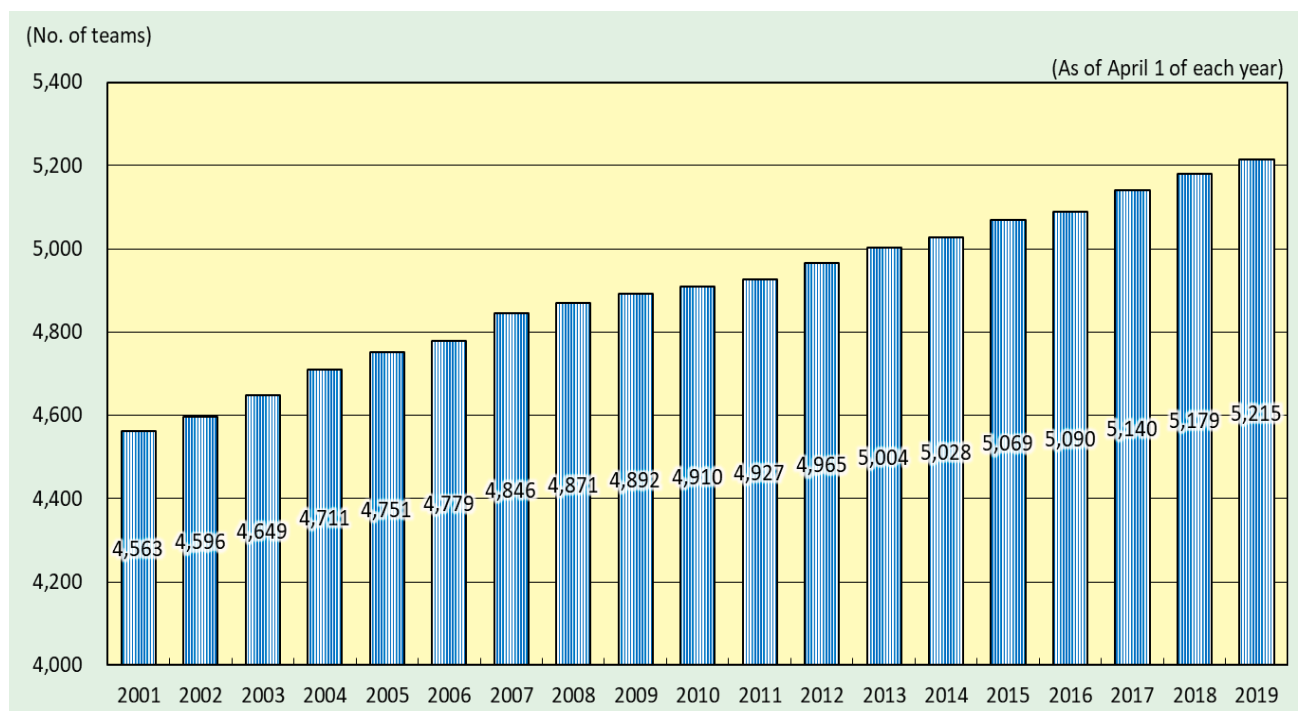


(Note) 1 Prepared based on "The Accident Reports on Hazardous Materials."  
2 Digits in the second decimal place were rounded off, so in some cases the totals may not be consistent.

engaged in ambulance services as ambulance team members (including not only full-time ambulance team members, but also ambulance team members who have been appointed as such and who concurrently serve on firefighting vehicles such as pump vehicles by riding along with them). (Fig. 2-5-7)

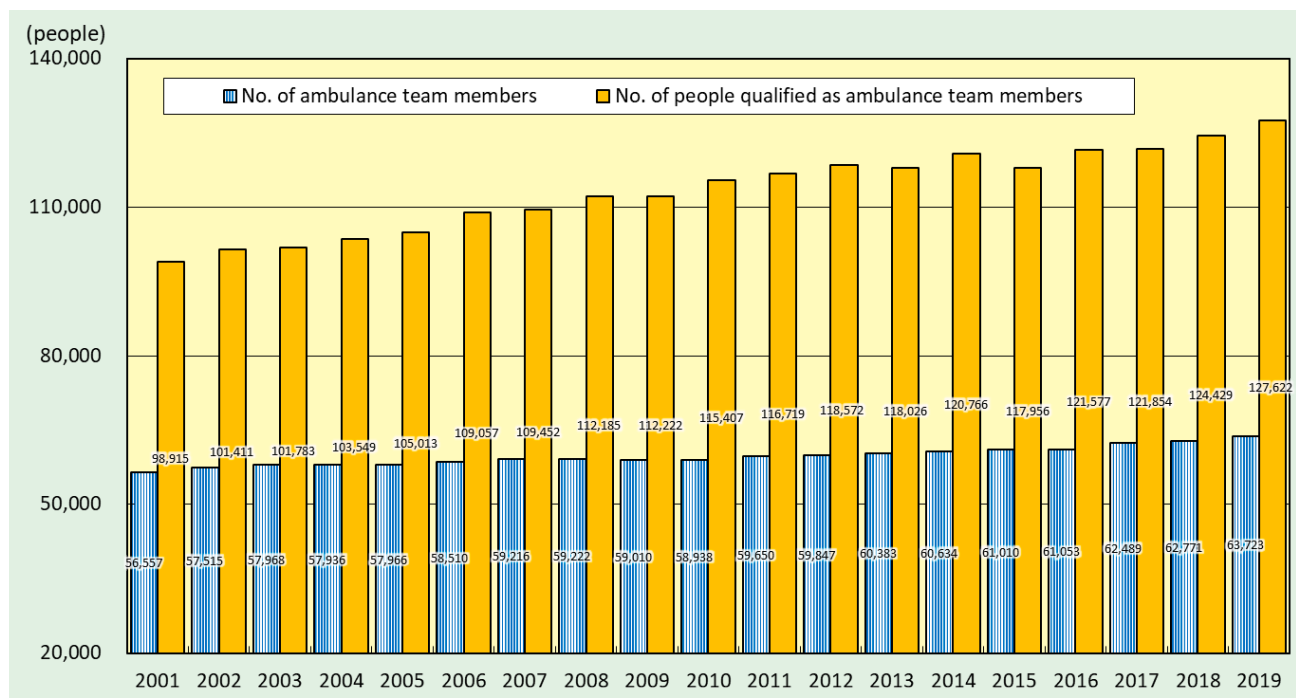
What is more, of the firefighters who fulfilled the eligibility requirements to be ambulance team members, the number who had completed 250 hours' worth of ambulance courses to enable them to provide even more advanced first-aid treatment (including the former Ambulance Standard Course and former Ambulance II

**Fig. 2-5-6 Trends in the number of ambulance teams**



(Note) Prepared based on "The Survey on Emergency Service Implementation Status".

Fig. 2-5-7 Trends in the number of ambulance team members



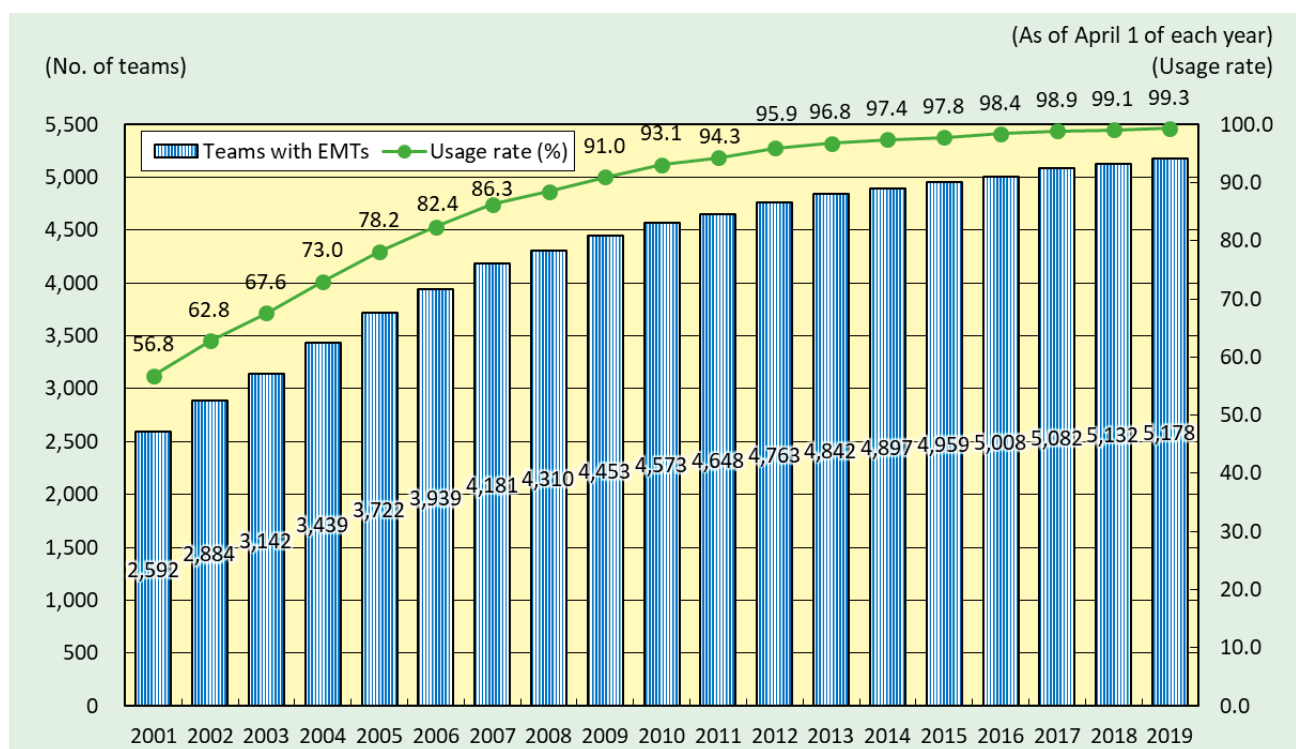
(Note) Prepared based on the Survey on Emergency Service Implementation Status.

Course) came to 85,437 people (an increase of 1,940 YoY) nationwide as of April 1, 2019. Of these, 34,136 are engaged in ambulance services as ambulance team members.

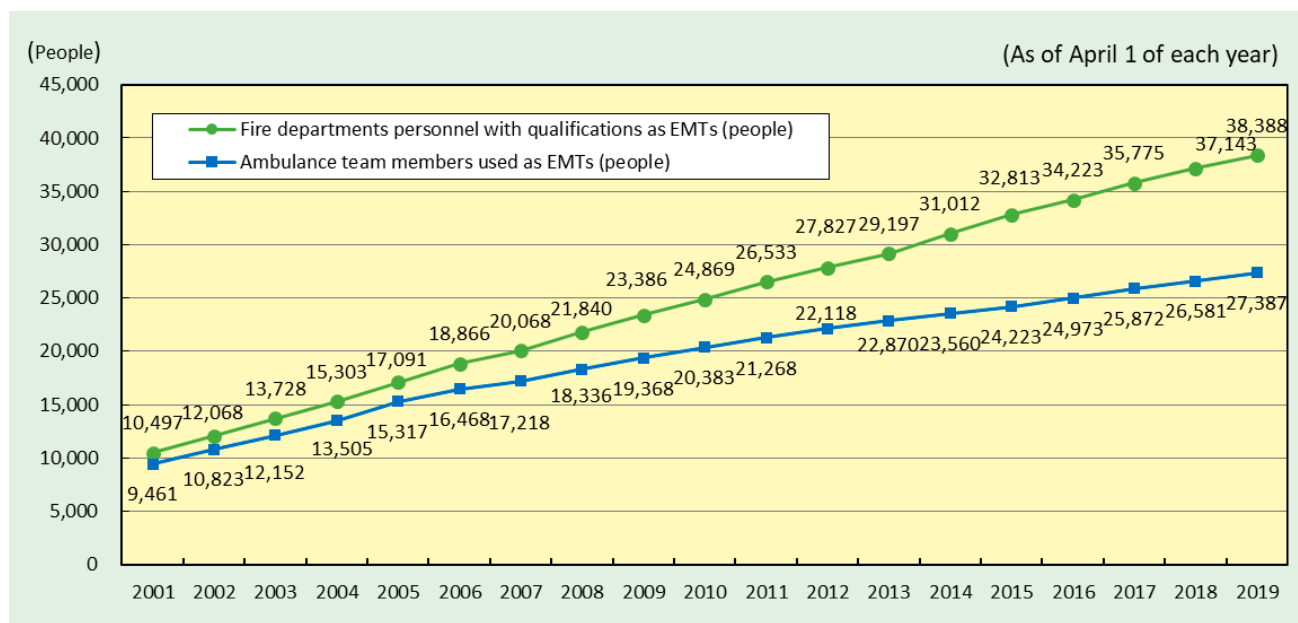
As of April 1, 2019, 18 associate ambulance team member are engaged in ambulance services in nationwide. In December 2018, the FDMA promulgated an ordinance

to partially revise the Ordinance of Enforcement for the Fire Service Act, and from April 1, 2017, when a municipality establishes a plan (implementation plan) that describes the matters specified in an ordinance of the Ministry of Internal Affairs and Communications as measures to ensure appropriate ambulance services in depopulated areas and remote islands, it will be possible

Fig. 2-5-8 Trends in the number of ambulance teams with EMTs



(Note) Prepared based on "The Survey on Emergency Service Implementation Status".

**Fig. 2-5-9 Trends in the number of EMTs**

(Note) Prepared based on "The Survey on Emergency Service Implementation Status".

to form an ambulance team with two paramedics and one associate paramedic. In this case, it is possible to form an ambulance team with two ambulance team members and one associate ambulance team member. An associate ambulance team member is defined as a full-time firefighter who has completed a basic training course (92 hours) on ambulance services, and others. For example, it is assumed that a government employee who has completed the above course and is also assigned to a full-time firefighter. In addition, it also stipulates that those who have the same or higher level of knowledge and experience as those who have completed the above-mentioned courses may be designated as associate ambulance team members. They are doctors, public health nurses, nurses, associate nurses, EMTs, and those who have completed the Ambulance class.

### (3) Trends in the Number of EMTs and Ambulance Teams with EMTs

As a result of the increasing sophistication of ambulance services, the FDMA promotes the fostering of EMTs and the setting in place of structures for making use of them. The objective is a structure where at least one EMT is stationed with every ambulance team.

As of April 1, 2019, 725 fire departments out of 726 fire departments in Japan are making use of EMTs, and the usage rate is 99.9% (same as the previous year). The number of ambulance teams with EMTs came to 5,178 (an increase of 46 YoY), which corresponds to 99.3% of the 5,215 ambulance teams throughout Japan (an increase of 0.2% from the previous year), with this rising year by year. What is more, there were 38,388 fire departments personnel with EMT qualifications (an increase of 1,245 people YoY). Of these, 27,387 had been put to use as EMTs (an increase of 806 people YoY), with this number steadily increasing year by year. (Fig. 2-5-8, Fig. 2-5-9)

### (4) Number of Ambulances

The number of ambulances owned by fire departments

throughout Japan as of April 1, 2019 came to 6,364 (an increase of 35 YoY), including those for emergency use. Of these, the number of high-standard ambulances came to 6,179 (an increase of 74 YoY), which corresponds to 97.1% of the total.

### (5) Ambulance Services along National and Other Expressways

When it comes to ambulance services along national expressways, the Seto-Chuo Expressway, and the Kobe-Awaji-Naruto Expressway (hereafter referred to as "national and other expressways"), the East Nippon Expressway Company, Central Nippon Expressway Company, West Nippon Expressway Company, and Honshu-Shikoku Bridge Expressway Company (hereafter referred to as "expressway companies") are responsible for road management operations and offering centralized, independent ambulance services. Moreover, the municipalities along said expressways are responsible for handling ambulance services as per the provisions of the Fire Service Act. So it has been stipulated that both parties are to work together to properly and efficiently safeguard human life.

As of March 31, 2019, ambulance services along national and other expressway were provided by municipal firefighting agencies over every section of the 9,155km of the length of expressway currently in use. The expressway companies bear a certain extent of the financial burden that is placed on the municipalities providing ambulance services.

## 3. Promoting Coordination between Firefighting and Medical Care

### (1) Acceptance of People Using Ambulance Transport at Medical Institutions

Reports were received on cases in which problems arose in choosing medical institutions to receive patients during ambulance transport in regions all over Japan.

Based on these, in October 2007 the FDMA performed the first survey on the actual state of acceptance for pregnant or perinatal patients transported from 2004 to 2006. Moreover, for the survey on the actual acceptance status regarding ambulance transport in 2007, the survey was carried out not only on pregnant and perinatal patients, but also focused on patients with severe conditions or worse, young patients, and patients transported to critical care centers.

In the “Survey of Medical Institution Acceptance of Ambulance Transports in 2018”, the number of cases with 4 or more inquiries and cases with a stay of 30 minutes or more at the scene were compared to the same survey in 2017. The number of cases transporting young patients (under 15) decreased, while the number of cases transporting patients with severe condition or worse, pregnant or perinatal cases, and critical care center cases increased. The percentage of cases transporting young patients (under 15) remained unchanged, while the percentage of cases transporting patients with severe condition or worse, pregnant or perinatal cases, and critical care center cases increased. (Table 2-5-6, Table 2-5-7)

## (2) Standards on Patient Transport and Their Acceptance

In light of the occurrence of cases in which it is

difficult to select an accepting medical institution during ambulance transport, in 2009 the FDMA worked together with the Ministry of Health, Labour and Welfare to enact the Standards on Patient Transport and Their Acceptance (hereafter referred to as the “acceptance standards”) for the prefectures. It also revised the Fire Service Act to include content mandating the establishment of committees concerning the acceptance standards (hereafter referred to as “legally-mandated committees”). The revised Fire Service Act was enacted on October 30, 2009. At present, committees have been established in every prefecture, and acceptance standards have been formulated as well.

The hope is that through the legally-mandated committees, the prefectures will survey and verify the transport of patients and their acceptance status based on the acceptance standards. Then, based on this, it is hoped that they will tie the results of this in with making improvements to the acceptance standards and so forth.

For its part, the FDMA works to get a grasp of the status of initiatives by and challenges for each of the prefectures. It also makes efforts to follow-up, such as by broadly getting a grasp of and introducing case examples of initiatives by local regions that are striving to operate this effectively.

Each prefecture and local region brings together firefighting agencies and medical organizations (including hospital departments other than those offering ambulance

**Table 2-5-6 Trends in the number of cases in which four or more acceptance inquiries were made to medical institutions**

	2014		2015		2016		2017		2018	
	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
cases in which patients with severe conditions or worse were transported	14,114	3.2%	11,754	2.7%	10,039	2.3%	9,834	2.2%	10,861	2.4%
cases in which pregnant or perinatal patients were transported	617	3.8%	549	3.7%	540	3.5%	475	3.3%	545	3.6%
cases in which young patients (under 15) were transported	8,708	2.4%	8,570	2.4%	7,527	2.0%	6,442	1.7%	6,368	1.7%
cases in which patients were transported to critical care centers	26,740	3.6%	25,411	3.3%	20,248	2.6%	20,262	2.5%	23,116	2.6%

(Notes) 1 Prepared based on “The Survey on the Actual Acceptance Status at Medical Institutions for Emergency Transport in 2017”.  
 2 There is some overlap.  
 3 The percentage is the percentage versus the total number of people transported from each respective category.

**Table 2-5-7 Trends in the number of cases where the time spent at the scene was 30 minutes or longer**

	2014		2015		2016		2017		2018	
	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
cases in which patients with severe conditions or worse were transported	23,500	5.3%	22,379	5.2%	22,104	5.0%	22,620	5.0%	23,643	5.1%
cases in which pregnant or perinatal patients were transported	1,267	7.8%	1,194	7.9%	1,161	7.5%	1,112	7.8%	1,257	8.2%
cases in which young patients (under 15) were transported	11,423	3.2%	12,039	3.4%	12,237	3.2%	11,515	3.1%	11,494	3.1%
cases in which patients were transported to critical care centers	45,208	6.1%	47,030	6.1%	40,213	5.1%	42,491	5.2%	47,455	5.3%

(Notes) 1 Prepared based on “The Survey on the Actual Acceptance Status at Medical Institutions for Emergency Transport in 2017”.  
 2 There is some overlap.  
 3 The percentage is the percentage versus the total number of people transported from each respective category.



service) and sometimes just medical organizations, as well as healthcare centers, welfare, police, and other related organizations according to the local circumstances in order to thoroughly discuss and share their awareness of problems through ex-post inspections of transport and acceptance conditions. In addition, through the creation of “relationships with a visible face” on an everyday basis, it is important that they continue to draft more specific and effective rules (revisions to acceptance standards, etc.) geared towards smooth transport and acceptance. Each group is being called upon to make greater efforts regarding such initiatives. For its part, the FDMA has resolved to continue carrying out the necessary surveys and providing information to contribute to improving the application of the acceptance standards at the prefectural committees and to discussions over revisions to them.

In light of the revisions to the Fire Service Act and the fact that emergency transport is carried out based upon the acceptance standards, local governmental financial measures are being taken through special tax grants with respect to the costs entailed by the assistance rendered to private secondary ambulance institutions<sup>9</sup> by local public bodies in an effort to enhance ambulance medical care structures in local regions.

### (3) Ambulance Medical Care Structure

With regards to the notification status of ambulance hospitals and ambulance clinics, which constitute the primary destinations to which patients are taken, as of April 1, 2019 there were 4,172 such locations throughout Japan. (**Attachment 2-5-5** untranslated)

There are 575 weekend and nighttime ambulance care centers (as of April 1, 2019) that ensure that initial medical care can be received on weekends and at nights, which serve as the initial ambulance medical care structure. By way of the secondary medical care structure, 2,873 hospitals on a hospital-group rotating system and joint-use hospitals have been established (as of April 1, 2019), and so have 291 critical care centers (as of July 1, 2019) by way of the tertiary medical care structure. Moreover, among the critical care centers are advanced critical care centers capable of handling patients with specific illnesses or injuries, such as extensive burns, severed digits and limbs, and acute poisoning, of which 42 locations have been set in place (as of July 1, 2019).

Approval for ambulance hospitals and ambulance clinics is provided through ambulance reporting structures, while the installation of initial, secondary, and tertiary ambulance care structures is performed in an integrated manner under the medical care plans established by prefectural governors.

Under these ambulance care structures and through the acceptance standards enacted by the prefectures through the provisions of the Fire Service Act, a list of medical institutions that can provide medical care according to patients' conditions has been compiled. Firefighting agencies use this list when carrying out ambulance transport operations.

## 4. Promotion of More Sophisticated Ambulance Services

### (1) Promotion of Education for Ambulance Service Personnel

On August 15, 1991, in order to enhance pre-hospital care (first aid treatment at the scene of an emergency and during transportation to a hospital or clinic) and improve the lifesaving rate in Japan, the Emergency Medical Technicians Act was enforced and a new qualification system was set up for EMTs who are responsible for performing certain first-aid treatment under the direction of physicians until the ambulance team members arrive at the scene to transport the victim to a hospital or clinic.

In the case of firefighters, the EMT qualification can be obtained by completing an ambulance services course, engaging in ambulance services for 5 years or at least 2,000 hours, and then completing an EMT training course for at least 6 months before passing a national examination. After obtaining the qualification, in order for EMTs to engage in ambulance services, they are required to take at least 160 hours of hospital training according to the hospital training guidelines. It is recommended that after that, they subsequently take at least 128 hours of further training every two years (of which, hospital training should be at least 48 hours).

The FDMA has been promoting various measures at firefighting schools in prefectures, etc. so that the first-aid course can be implemented smoothly based on the increase of first-aid treatment contents and so that EMTs can undergo steady training. As the education and training in order to acquire EMT qualifications (1) includes advanced and specialized contents, (2) requires securing an instructor related to ambulance medical care, and (3) requires consideration be given to the efficiency of the education and training, etc., the enactment of the Emergency Medical Technicians Act lead to the establishment of the Foundation for Ambulance Service Development was established in 1991 with the investment of 47 prefectures nationwide for the purpose of training EMTs of fire departments. It has since been engaged in the training of EMTs.

In FY2018, 794 EMTs at the EMT Training Center of the Foundation for Ambulance Service Development and 397 EMTs at the EMT training centers in the designated cities completed the training course and took the national examination.

Against the backdrop of it being nearly 30 years since the Emergency Medical Technicians Act was enforced and having trained personnel to guide other EMTs, by experienced EMTs conducting field activities that are done in an environment different from that of a scene of an emergency at a hospital, it improves the quality of emergency services and secures the trust of the public and contributes to reducing the educational burden on fire departments and medical institutions. Thus, the role required of EMTs in leadership positions (hereinafter leader EMTs) is increasing.

As the requirements for EMT instructors and the educational curriculum necessary for their training were expressed at the “Examination Committee on the Vision

<sup>9</sup> Among secondary medical institutions, ambulance service notice institutions (excluding national and public medical institutions and public institutions).

of Emergency Services” held by the FDMA in 2013, the Emergency Lifesaving Kyushu Training Center opened its doors in May 2014 and of September the same year, the Emergency Department of the FDMA’s Fire and Disaster Management College Emergency started the education necessary to receive certification as an EMT. Some fire academy schools conduct their own training of EMTs.

Furthermore, in November 2015, the FDMA created the “EMT Training Textbook” as a nationwide standard that expanded the curriculum to more specific educational content in order to facilitate further training of EMTs.

In addition, the promotion of national exchanges among ambulance team members and the improvement of skills relating to emergency efforts are being done through training and research opportunities such as the National Ambulance-Crew Symposium and the Japanese Society for Emergency Medicine.

## (2) Increase in the Treatment Scope of EMTs

The treatment scope of EMTs has, on the premise of establishing the medical control system described in (3), gradually increased as shown in [Increase in treatment scope over time] [1] to [4].

The most recent example of increasing the treatment scope of EMTs is [4], and its backstory is as follows.

– From 2011, in the “Research on the treatment scope of EMTs”, in order to improve the lifesaving rate of the injured and sick and reduce the aftereffects, the clinical efficacy, safety, and effectiveness of the three acts of (1) blood glucose measurement and administration of glucose solution for cases of hypoglycemic attacks, (2) use of an inhaled beta-adrenoceptor stimulant for patients with severe asthma, and (3) intravenous catheterization and infusion for cardiopulmonary arrests were conducted at 129 fire departments nationwide.

– As a result of analysis and consideration in this empirical study, it was concluded that (1) and (3) of the three acts in the report of the “Examination Meeting on the Work of EMTs” published by the Ministry of Health, Labour and Welfare in August 2013, should be added to the scope of treatment of EMTs. In response to this, from April 1, 2014, intravenous catheterization and infusion for patients suffering from a severe cardiopulmonary arrest and blood glucose measurement and administration of glucose solution for cases of hypoglycemic attacks were added to the scope of EMT treatment.

### [Increase in treatment scope over time]

#### [1] Defibrillation

Since April 2003, defibrillation, which has been carried out by EMTs under the specific instructions of physicians since the Emergency Medical Technicians Act was enforced in 1991, can be carried out by an EMT under the comprehensive instructions of a physician, on the condition that the medical control system is established before and after defibrillation, such as protocols are created and popularized, courses required in line with the course curriculum are carried out, and the establishment of a post-verification system for carrying out treatment in line with protocols, etc.

#### [2] Tracheal intubation

From July 2004, on the condition that the medical control system is established before and after tracheal intubation, tracheal intubation can be performed by an EMT who has been recognized as completing the

specific course and hospital training. As of April 1, 2019, of ambulance team members who are qualified EMTs, 15,137 of them can perform tracheal intubation.

When using an endotracheal tube to secure the airway, because using a video laryngoscope will increase the safety and certainty of securing the airway, from August 2011, EMTs who have completed the specified training and hospital training and have been certified are allowed to use a video laryngoscope, and therefore it is expected that the regional medical control councils will continue to consider its operation. As of April 1, 2019, of ambulance team members who are qualified EMTs, 5,480 of them can perform treatment with a video laryngoscope.

#### [3] Drug administration (adrenaline)

From April 2006, on the condition that the medical control system is established before and after drug administration, drug administration can be performed by an EMT who has been recognized as completing the specific course and hospital training. As of April 1, 2019, of ambulance team members who are qualified EMTs, 26,230 of them can administer drugs (adrenaline).

Furthermore, from March 2009, if the patient who is in a life-threatening state due to anaphylactic shock is someone who has been prescribed an adrenaline preparation in advance that can be self-injected, it is possible for an EMT to administer the adrenaline.

#### [4] Intravenous catheterization and infusion for patients suffering from a severe cardiopulmonary arrest, and blood glucose measurement and administration of glucose solution

From April 2014, on the condition that the medical control system is established before and after drug administration, drug intravenous catheterization and infusion for patients suffering from a severe cardiopulmonary arrest and blood glucose measurement and administration of glucose solution for cases of hypoglycemic attacks can be performed by an EMT who has been recognized as completing the specific course and hospital training. As of April 1, 2019, among the ambulance team members who are qualified as EMTs, 22,891 of them can perform intravenous catheterization and infusion for patients suffering from a severe cardiopulmonary arrest, and 22,924 of them can take blood glucose measurements and administer a glucose solution.

## (3) Enhancement of Medical Control System

The medical control system in pre-hospital care is a system that ensures the quality of first aid, etc. performed by ambulance team members, including EMTs, from a medical point of view. Specifically, it is a system that, in collaboration with fire departments and medical institutions, [1] creates various protocols according to the characteristics of the region based on medical grounds, [2] enables emergency personnel to promptly request instruction, guidance, or advice from physicians at any time from a scene of an emergency, [3] has physicians conduct a medical and objective post-verification of emergency efforts, and feeds back the results of said post-verification, as well as [4] conducting further education, etc. The Medical Control Council, which is a forum for discussions between fire departments and medical institutions, is established in each prefecture and each region. As of August 1, 2019, the number of Medical Control Councils in each region is 251. The Medical

Control Council is actively working to improve the quality of emergency services through post-verification, etc. In order to improve the quality of first aid, etc. performed by ambulance team members, including EMTs, and make emergency services more sophisticated, such as by increasing the scope of EMT treatment, it is necessary to further enhance and strengthen the medical control system.

The FDMA regularly holds the “National Medical Control Council Liaison Meeting”, which was established in May 2007 together with the Ministry of Health, Labour and Welfare with the purpose of enhancing and strengthening the National Medical Control Council and sharing information among related parties nationwide.

In addition, the Medical Control Council can also be used for legal counsel on implementation standards based on the Fire Service Act revised in 2009.

Furthermore, in recent years, the roles required of the Medical Control Council have diversified. For example, as the number of elderly people requesting emergency services is increasing, there are cases in which emergency services are requested by the families of patients to stop performing cardiopulmonary resuscitation (CPR). Based on this background, the “Examination Committee on the Implementation of CPR at the Scene of an Emergency in Line with the Wishes of the Sick or Injured Person” was established in the “2018 Examination Committee on the Vision for Emergency Services” to conduct a fact-finding survey of the status of efforts by fire departments, etc. and organize and examine issues. At the examination committee, experts indicated a basic awareness that ‘the person’s choices’ should be respected’ in cases where the patient’s family communicates at the scene of an emergency that the patient does not want CPR treatment. At scenes of emergencies, which consist of all kinds of scenarios and are urgent situations and in many cases there is no physician present, usually, the ambulance crew

has time and information-related restrictions such as the wishes of the injured or sick person are not shared with them beforehand. Therefore, the committee concluded that it is necessary to clarify the actual situation of the cases and through verification in each place, to accumulate knowledge about the response of the ambulance crew by pulling together all the cases. The Examination Committee introduced case studies from areas where CPR is planned to be discontinued if, after thorough discussion at somewhere like the Medical Control Council, one contacts the primary care physician and receives an instruction to discontinue CPR. It was once again acknowledged that the role played by the Medical Control Council is very important.

#### **(4) Use of Emergency Resuscitation Statistics (Utstein data)**

In Japan, the Utstein approach<sup>\*10</sup> has been introduced across all fire departments nationwide since January 2005. This unified introduction across the entire country is a first of its kind anywhere in the world and is an innovative initiative. The FDMA also operates an online system for collecting and analyzing the results of research done via the Utstein approach, and has accumulated 14 years’ worth of data from 2005 to 2018. On an application basis, the data is provided to related academic societies so that the accumulation of this data can be used appropriately and effectively. The data is also used for constructing measures and systems for improving the lifesaving rate.

In the past, the Utstein approach was published as “Utstein statistics” and “Status of lifesaving rate of patients suffering from cardiopulmonary dysfunction”, but the name has been changed to “Emergency Resuscitation Statistics” since 2009 in order to make it easier to understand that the statistics are for patients suffering from cardiopulmonary dysfunction who were transported to a hospital by an ambulance.

– omitted –

<sup>\*10</sup> Utstein approach: This is a survey and statistical approach for classifying cases of cardiopulmonary arrest according to the cause, whether it was witnessed or not, whether bystanders performed CPR or not, etc., and recording the prognosis (survival rate after one month, etc.) of the injured or sick in each category. It was proposed at an international conference held at Utstein Monastery in Norway in 1990 and is recommended worldwide.

# Section 6 Rescue System

☞ Japanese Original P.230

## 1. Implementation Status for Rescue Activities

### (1) Number of Rescue Activities and Number of People Rescued

The life-saving rescues performed by firefighting agencies refer to activities whereby human or machine-power is used to extricate people from dangerous situations and transport the victims to safe locations. Examples of such dangerous situations include fires, traffic accidents, water accidents, natural disasters, and accidents due to machines.

As for the implementation status for rescue activities throughout Japan in 2018, 61,507 rescue activities were carried out (an increase of 5,192, or 9.2% increase, YoY) and 63,836 people were rescued (this refers to the number of people rescued through rescue activities; an increase of 6,172, or 10.7% increase, YoY). (Table 2-6-1, Attachment 2-6-1 untranslated)

As part of this, the primary reason for the increase is due to the increase in the number of rescue activities (an increase of 3,386, or 14.9%, YoY) and the number of people rescued (an increase of 2,744 people, or 12.9%, YoY) in accidents caused by buildings. Secondly, it is due to the increase in the number of rescue activities (an increase of 691, or 215.9%, YoY) and the number of people rescued (an increase of 3,084, or 248.3%, YoY) in accidents caused by storms, floods and other natural disaster incidents.

### (2) Implementation Status of Rescue Activities by Type of Incident

Looking at the status of rescue activities by type of incident reveals that the numbers for accidents caused by buildings and traffic accidents remain high in terms of both the number of rescue activities and the number of people rescued.

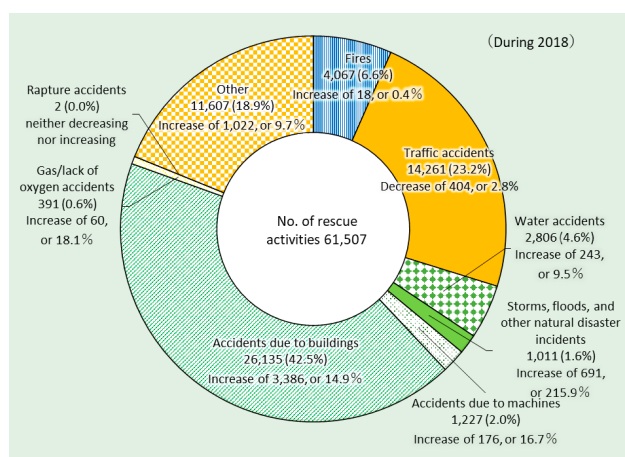
Accidents caused by buildings has been the type of incident with the greatest number of rescue activities since 2008. In terms of the number of people rescued, accident

**Table 2-6-1 Trends in the number of rescue activities and number of people rescued**

Year	Category	No. of rescue activities		No. of people rescued	
		No.	Change YoY (%)	No.	Change YoY (%)
During 2014		56,695	△ 0.4	57,809	0.3
During 2015		55,966	△ 1.3	59,190	2.4
During 2016		57,148	2.1	57,955	△ 2.1
During 2017		56,315	△ 1.5	57,664	△ 0.5
During 2018		61,507	9.2	63,836	10.7

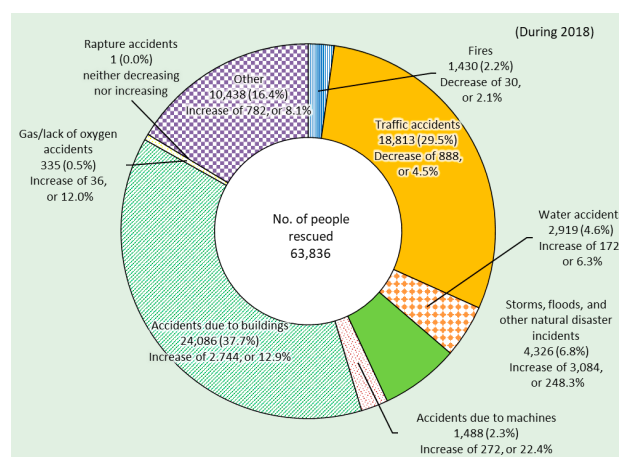
- (Notes) 1 Prepared based on "The Survey on the Implementation Status of Rescue Activities".  
 2 This includes the number of activities by volunteer fire corps in municipalities where fire departments/fire stations have not been established. The same holds true for the following data in this section.

**Fig.2-6-1 Number of rescue activities by type of incident**



(Note) Prepared based on "The Survey on the Implementation Status of Rescue Activities".

**Fig.2-6-2 Number of people rescued by type of incident**



(Note) Prepared based on "The Survey on the Implementation Status of Rescue Activities".



**Table 2-6-2 Number of dispatches and status of activities by type of incident**

(During 2018)

Category		Fires	Traffic accidents	Water accidents	Storms, floods, and other	Accidents due to machines	Accidents due to buildings	Gas/lack of oxygen accidents	Rapture accidents	Other	Total
Year											
No. of rescue activities		4,067 (6.6)	14,261 (23.2)	2,806 (4.6)	1,011 (1.6)	1,227 (2.0)	26,135 (42.5)	391 (0.6)	2 (0.0)	11,607 (18.9)	61,507 (100.0)
No. of people rescued		1,430 (2.2)	18,813 (29.5)	2,919 (4.6)	4,326 (6.8)	1,488 (2.3)	24,086 (37.7)	335 (0.5)	1 (0.0)	10,438 (16.4)	63,836 (100.0)
Firefighters	No. of rescue workers dispatched	136,131 (9.6)	332,724 (23.6)	83,130 (5.9)	20,231 (1.4)	25,199 (1.8)	427,611 (30.3)	12,511 (0.9)	124 (0.0)	373,647 (26.5)	1,411,308 (100.0)
	No. of people who engaged in rescue activities	57,609 (9.9)	140,967 (24.2)	41,285 (7.1)	14,454 (2.5)	11,923 (2.0)	209,667 (36.0)	3,854 (0.7)	9 (0.0)	102,644 (17.6)	582,412 (100.0)
Volunteer firefighters	No. of rescue workers dispatched	49,768 (62.4)	1,322 (1.7)	4,141 (5.2)	3234 (4.1)	78 (0.1)	2,275 (2.9)	138 (0.2)	0 (0.0)	18,803 (23.6)	79,759 (100.0)
	No. of people who engaged in rescue activities	7,041 (43.3)	109 (0.7)	3,099 (19.1)	2663 (16.4)	3 (0.0)	3 (0.0)	7 (0.0)	0 (0.0)	3,340 (20.5)	16,265 (100.0)
No. of people who engaged in rescue activities per incident		15.9	9.9	15.8	16.9	9.7	8.0	9.9	4.5	9.1	9.7

- (Notes) 1 Prepared based on “The Survey on the Implementation Status of Rescue Activities”.  
 2 The numbers in parenthesis show the proportion (%). Less than whole units were rounded up, so in some cases the totals may not be consistent.  
 3 “No. of rescue workers dispatched” refers to the total number of people dispatched in order to carry out rescue activities.  
 4 “No. of people who engaged in rescue activities” refers to the number of people who actually engaged in rescue activities out of the number dispatched.  
 5 “Accidents due to buildings” refer to accidents caused by the collapse of buildings, gates, fences, walls, and other facilities ancillary to buildings or equivalent structures; accidents in which people were trapped within buildings; and accidents from people being caught between buildings.  
 6 “Other” refers to accidents other than the types listed above that necessitated rescue by firefighting agencies.

caused by buildings became the type with the most people rescued since 2013.

The number of rescue workers dispatched (which refers to the total number of people dispatched in order to carry out rescue activities) came to 1,491,067 in total. Of these, the number of firefighters dispatched came to 1,411,308 in total, of which 30.3% were dispatched for “Accidents due to buildings”, while 23.6% were dispatched due to “Traffic accidents”. At the same time, the number of volunteer fire corps members dispatched came to 79,759 in total, of which 62.4% were dispatched on account of fires.

Next, the number of people who engaged in rescue activities (this refers to the number of people who actually engaged in rescue activities out of the number dispatched) came to 598,677 in total. This means that 9.7 people on average took part in each individual rescue activity. What is more, in terms of the number of people engaged in each individual rescue activity by type of incident except storms, floods and other natural incidents which will increase or decrease year by year depending on the dispatch of National Fire-Service Team, fires had the greatest number at 15.9 people on average, followed by water-related accidents at 15.8 people. (Fig. 2-6-1, Fig. 2-6-2, Table 2-6-2)

## 2. Implementation Structure for Rescue Activities

### (1) Number of Rescue Crews and Number of Rescue Crew Members

Rescue crews are established in municipalities that have fire departments and fire stations pursuant to the Ministerial

Ordinance Establishing Standards for the Organization, Outfitting, and Establishment of Rescue Crews (Ministerial Ordinance No. 22 of the Ministry of Home Affairs from 1986; hereafter referred to as the “Rescue Ordinance”). They consist of members who have received specialized education related to lifesaving (140 hours’ worth), as well as rescue and relief supplies and the rescue vehicles equipped with these needed for rescue activities. They are categorized into four classifications: rescue crews, special rescue crews, advanced rescue crews, and special advanced rescue crews.\*1

As of April 2019, 1,432 crews had been established at 709 fire departments, and the number of rescue crew members came to 24,684 people. This means that on average, roughly 2.0 rescue crews have been established at each fire departments, with an average of 17.2 rescue crew members stationed on each crew. The number of fire departments have been dropping as they spread out to cover broader areas, but the number of rescue crews have been trending upward.

### (2) Ownership Status of Rescue Equipment for Rescue Activities

Rescue equipment for rescue activities includes equipment for removing heavy objects such as hydraulic spreaders, cutting equipment like hydraulic cutters, detection and measurement equipment such as inflammable gas measuring instruments, and more. Advanced, specialized equipment has been deemed necessary for them to guard against the large-scale earthquake disasters and terrorist disasters that could potentially occur. As such, the FDMA makes efforts to

\*1 The Rescue Ordinance stipulates that municipalities with a population of 100,000 people or more and a standing fire defense structure must establish a special rescue crew. Core cities and the like must have one or more special rescue crews that serve as advanced rescue crews, and the Tokyo Fire Department and ordinance-designated cities must have one or more advanced fire crews that serve as special advanced rescue crews.



**Table 2-6-3 Ownership status of rescue equipment for rescue activities and board vehicles for carrying rescue crews**

(As of April 1, 2019)

Major rescue equipment	Ministerial ordinance annex 1	Three Part ladders	Lifeline throwing guns	Hydraulic spreader	Hydraulic cutters	Portable winches	Engine cutters	Chainsaws	Gas cutters	Inflammable gas measuring instruments	Breathing apparatus	Simple image search machines
		7,801	1,816	2,117	2,023	4,397	6,510	7,078	1,296	5,730	50,430	926
	Ministerial ordinance annex 2	Mat air jacks	Large hydraulic spreaders	Large hydraulic cutters	Rock drills	Air saws	Rope climbing machines	Hammers/ drills	Ventilators	Oxygen masks		
		2,736	2,247	2,258	1,727	1,908	3,173	1,684	2,288	3,354		
	Ministerial ordinance annex 3	Image search equipment	Underground noise detectors	Thermal imaging devices	Night vision equipment	Earthquake alarms	Electromagnetic wave detectors	Carbon dioxide detectors	Underwater probes			
		626	329	1,558	361	223	122	64	86			
	Boarding vehicles	Rescue work vehicles	Ladder-equipped vehicles	Folding ladder-equipped vehicles	Fire pump vehicles	Fire cistern-equipped vehicles	Chemical vehicles	Special disaster vehicles	Other	Total		
		1,243	397	111	237	390	120	28	481	3,007		

(Note) Prepared based on "The Survey on the Implementation Status of Rescue Activities".

promote the establishment and maintenance of rescue work vehicles and rescue equipment by taking advantage of grants for equipping National Fire-Service Teams, as well as tax measures allocated to local governments and more. (Table 2-6-3)

### 3. Holding National Firefighting and Rescue Skills Meets

The National Firefighting and Rescue Skills Meet has been held every year since 1972 (sponsored by the Japan Firefighters Association, with the backing of the FDMA and others). Its goal is to foster the physical strength, mental toughness, and technical capabilities needed for rescue activities, as well as to gather rescue crew members from throughout Japan together to cultivate crew members who can serve as examples to others through competition

and learning.

The National Firefighting and Rescue Skills Meet are divided up into a land division and a water division. For each division, there are "Basic training" where individual crew members practice basic skills, "Coordinated training" where crew members practice their individual skills together with cooperation with other crew members, and "Skills training" where participating crew members demonstrate everything from training assumptions to rescue methods using creativity and ingenuity without stipulations as to the equipment or training skills that will be used.

The 48th meet was held on August 25, 2019 in Okayama City, Okayama Prefecture. Here, 700 crew members took part in the land division and 228 took part in the water division. The 49th meet will be held in Kitakyushu City Fukuoka Prefecture.

—omitted—

# Section 8

## Integrated Fire Service Support and National Fire-Service Team for Disaster Response

📖 Japanese Original P.241

### 1. Integrated Support System for Fire Service

#### (1) Mutual Support Agreement for Fire Services

As municipalities are obliged to make efforts to support each other as and when necessary regarding firefighting efforts (Article 39, Paragraph 1 of the Fire Organization Act), by concluding agreements on mutual firefighting support, it is now possible to respond appropriately to large-scale disasters and special disasters.

Currently, in all prefectures, there are firefighting mutual support agreements (including agreements for only municipalities where firefighting services are on hand) in which all municipalities under each prefecture and firefighting administrative associations and so on participate.

#### (2) Establishment of Integrated Support System for Fire Service

To respond to large-scale disasters and special disasters, it is necessary for firefighting capabilities to operate extensively beyond the districts of municipalities or prefectures. For this reason, the FDMA will enhance and

strengthen the National Fire-Service Teams described in 2, and because in large-scale and special disasters and forest fires, helicopters are extremely effective in all firefighting and disaster prevention activities such as aerial fire extinguishing, rescue activities, emergency activities, information gathering, and emergency transportation, the FDMA promotes the active use of integrated support by firefighting organizations and prefectural firefighting and disaster helicopters by clarifying the procedure for requesting support based on the provisions of Article 44 of the Fire Organization Act) by formulating “Guidelines for Implementing Wide-area Aviation Firefighting Support in the Event of a Large-Scale Unique Disaster” to implement efficient operation (Table 2-8-1). In response to the continuous occurrence of large-scale forest fires, “Strengthening Vigilance against Forest Fires and Actively Utilizing Aerial Firefighting” (Notice 104 from the Manager of the Special Disaster Management Office at the FDMA and Notice No. 157 from the Manager of the Mutual Aid Management Office at the FDMA, dated May 10, 2017) was notified to each firefighting department. It clarified a request scheme to establish a system to prevent the spread of damage in the early stages of a forest fire in the event the fire and disaster prevention helicopters within the jurisdiction of the prefecture are not sufficient.

**Table 2-8-1 Actual track record regarding dispatches of wide-area aerial medical support teams based on the Implementation Guidelines for Wide-area Aerial Firefighting Support Teams during Large-scale and Special Disasters (past 20 years)**

(As of October 1, 2019; Unit: Case)

Year	Dispatch track record	By type of dispatch							
		Fires in forests and fields	Fires in locations other than forests and fields	Storms and floods	Explosion disaster	Earthquake disaster	Volcano disaster	Accidents involving aircraft	Other disasters
2000	23	21				1	1		
2001	32	31						1	
2002	38	38							
2003	24	18	2	1		2			1
2004	27	21		5		1			
2005	20	18				1			1
2006	8	6	2						
2007	13	12		1					
2008	10	10							
2009	21	18		2					1
2010	16	12		2				1	1
2011	28	23		5					
2012	7	5		2					
2013	20	17		2		1			
2014	36	19							17
2015	10	10							
2016	5	3		1		1			
2017	6	4		1				1	
2018	13	12						1	
2019	9	9							
Total	366	307	4	22	0	7	1	4	21

This is done by launching a large number of helicopters by promptly requesting the support of the fire and disaster prevention helicopters of other prefectures and making requests for the dispatch of self-defense force helicopters in a timely manner. In 2019, while there were nine forest fires that led to requests for integrated aerial firefighting support by the end of September, the spread of damage was kept to a minimum by requesting support as soon as possible and working together with self-defense force helicopters.

To continue to utilize fire and disaster prevention helicopters effectively across a wide area, it is necessary to further enhance and strengthen the nationwide Integrated Support System for Fire Service in the event of a large-scale disaster by setting up an aviation operation and coordination team at each prefecture's disaster response headquarters, promoting the development of a helicopter system and helicopter video transmission system for prompt information-gathering activities, and utilizing a helicopter dynamic management system for ascertaining the positional information of fire and disaster prevention helicopters and performing efficient adjustments to operations.

## 2. National Fire-Service Teams for Disaster Response

### (1) Creation of National Fire-Service Teams for Disaster Response and Their Enshrinement in Law via Revisions to the Fire Organization Act

#### A. Creation of National Fire-Service Teams

National Fire-Service Teams were created in June 1995 through the cooperation of fire departments from throughout Japan in order to create an assistance structure through the mutual cooperation of firefighting agencies from around the country. This was based on the lessons from the Great Hanshin-Awaji Earthquake on January 17, 1995, and designed to make it possible to carry out lifesaving rescue activities when large-scale disasters such as earthquakes occur within Japan in a faster, more effective manner.

The system is structured so that during times of normalcy, National Fire-Service Teams focus all of their energies on carrying out firefighting duties in their respective local regions. But once a large-scale disaster occurs somewhere in Japan, firefighting teams dispatch in a concentrated manner to the afflicted region from throughout the country to respond to said disaster at the request or instructions of the Commissioner of the FDMA. There they engage in firefighting activities, including lifesaving and rescue activities.

When they were first launched, National Fire-Service Teams consisted of 376 teams registered with the FDMA to provide domestic assistance for firefighting. They were comprised of rescue crews, ambulance crews, and more. There were also 891 out-of-prefecture assistance teams that engaged in activities between neighboring prefectures, which consisted of firefighting teams and others. This brought the total to 1,267 teams. In January 2011, a registration system for fire teams was introduced in order to enhance the dispatch structure for National Fire-Service Teams and response capabilities for various disasters.

What is more, a number of new types of teams were

established in order to handle increasingly complicated and diverse disasters. These included special disaster teams with the capacity to respond to special disasters such as oil and chemical disasters, as well as those involving toxic or hazardous substances, or radioactive materials, as well as air teams that use fire and disaster prevention helicopters and water teams that use firefighting boats. This brought the types of teams to 8, and the number of teams to 1,785.

#### B. Enshrinement in Law through the 2003 Revisions to the Fire Organization Act

It has been pointed out that potential earthquakes like a Tokai Earthquake, Tonankai/Nankai Earthquake, or an earthquake directly below the Tokyo Metropolitan Region are imminent, and the dangers of NBC terrorism disasters. As such, scenarios can be envisioned where it would be difficult to respond to such disasters promptly and precisely solely through the firefighting capabilities of the municipalities in the afflicted region or those found in the afflicted prefecture. Therefore, the Commissioner of the FDMA has been vested with the necessary authority to work to enhance and strengthen emergency response structures from a national perspective. In conjunction with this, the Act for the Partial Revision of the Fire Organization Act was drafted in 2003 and entered into force in 2004. This act includes provisions for national financial measures etc.

##### (a) Main content of the revised law

The main content of the revised law consists of staking out a clear legal position for National Fire-Service Teams, establishing the authority of the Commissioner of the FDMA to order dispatches, formulating basic plans relating to National Fire-Service Teams, and the financial measures of the national government.

##### (b) Legal position and dispatch orders by the Commissioner of the FDMA

National Fire-Service Teams, which have been put to use based on certain guiding principles since they were established, were given a clear legal position within the Fire Organization Act through the revisions to this law. In addition, in the event that a Tokai Earthquake or other large-scale disaster extends over two or more prefectures or an NBC disaster were to occur, the Commissioner of the FDMA shall be able to issue the orders to take the necessary measures to dispatch National Fire-Service Teams. This authority to order dispatches was established based on the thinking that the national government bears responsibility for deploying firefighting capabilities to afflicted regions in the form of ordering the dispatch of National Fire-Service Teams for large-scale disasters that should be handled from a truly nationwide perspective. The unprecedented, enormous disaster of the Great East Japan Earthquake was the first time this authority was exercised since it was established. Later, it was also implemented in the July 2008 torrential rains. The Plan on Basic Items concerning the Organization and Outfitting of Facilities for National Fire-Service Teams (see below, hereafter referred to as the "Basic Plan") revised in March 2019 stipulates the concept of dispatch orders for large-scale disasters, and dispatch orders were given for the disaster caused by Typhoon No. 19 in FY2019.

**Table 2-8-2 Enshrining National Fire-Service Teams into law through the 2003 revisions to the Fire Organization Act**

		Prior to the revisions	After the revisions
Position of the National Fire-Service Teams		Guidelines for National Fire-Service Teams	Fire Organization Act
Standards for organization and equipment, basic dispatch plans		Guidelines for National Fire-Service Teams	Basic Plan established by the Minister for Internal Affairs and Communications
Involvement of the Commissioner of the FDMA		Requests for measures	(1)Requests for measures (2)Orders (Tokai Earthquake and other large-scale earthquakes, NBC disasters)
Financial measures, etc.	Activity expenses	Special tax grants, etc.	Treasury expenses (The national government will bear any increased expenses and new expenses as a result of activities when said activities were ordered)
	Facilities and equipment	Encouragement subsidies(general subsidy rate of 1/3)	Mandatory subsidies (subsidy rate of 1/2)
	Use of government-owned assets and goods	Paid loans, etc.	Permission to use free of charge

(c) Enactment of the Basic Plan pertaining to National Fire-Service Teams

It has been legally mandated that the Minister for Internal Affairs and Communications is to enact the Basic Plan.

This Basic Plan was enacted in February 2004, and established matters such as standards for equipping and organizing the crews that comprise National Fire-Service Teams, dispatch plans, and targets for setting in place the necessary facilities. When it was initially enacted, it set the target of registering 3,000 National Fire-Service Teams by FY2008.

(d) Financial measures by the national government for National Fire-Service Teams

The dispatch of National Fire-Service Teams has been legally mandated in cases where they have been ordered to dispatch by the Commissioner of the FDMA. Therefore, the expenses that are newly required as a result of said dispatches are to be borne by the national government as treasury expenses as per Article 10 of the Local Government Finance Act.

What is more, the establishment of facilities pursuant to the Basic Plan were clarified in a legal sense as constituting “expenses to be subsidized by the national government.” In addition, the eligible facilities and the subsidy rate (one-half) have been established through government ordinance. (Table 2-8-2)

(e) Use of equipment for National Fire-Service Teams free of charge

With regard to those pieces of equipment from among the equipment needed for the organization of National Fire-Service Teams that it would be inefficient for local public bodies to outfit and own from a cost-effectiveness perspective, it is hard to imagine that progress will be made in outfitting this even if government subsidies are provided for it. There is some equipment that needs to be provided quickly in order to fulfill the national government’s responsibilities when it comes to large-scale and specialized disasters. As such, it was stipulated that this equipment is to be set in place by the national government, but provided for use free of charge to the prefectures or municipalities to which the personnel who are active as National Fire-Service Team members belong.

**C. Enhancing mobility through the 2008 revisions to the Fire Organization Act**

In 2008 the Act for the Partial Revision of the Fire Organization Act was drafted and entered into force. This included content such as enhancing the mobility of National Fire-Service Teams in an effort to further strengthen fire and disaster defense structures for large-scale earthquakes such as a Tokai Earthquake, Tonankai/Nankai Earthquake, or an earthquake directly below the Tokyo Metropolitan Region.

(a) Main content of the revised law

The main content of the revised law consists of establishing the authority for prefectural governors to order the dispatch of National Fire-Service Teams that are already active in municipalities where disasters have occurred, the establishment of coordination headquarters for firefighting support activities, and revisions to the requirements for the orders to dispatch National Fire-Service Teams by the Commissioner of the FDMA.

(b) Establishment of the authority for prefectural governors to order dispatches

This stipulated that prefectural governors can order the dispatch of National Fire-Service Teams active in municipalities where they normally operate. This can be done in cases where a disaster has occurred in two or more municipalities within a prefecture, and where it is deemed necessary for the sake of urgently providing firefighting support for municipalities where a disaster has occurred that lie outside of the municipalities in which said National Fire-Service Teams normally operate. This structure was set in place based on the fact that teams spanning across municipal borders within the same prefecture were mobilized for the 2004 heavy rainfall disasters in Niigata and Fukushima, as well as the Mid Niigata Prefecture Earthquake in 2004. In cases spanning across prefectural borders, it has been stipulated that the Commissioner of the FDMA shall coordinate this, since said coordination will span across two or more prefectures.

(c) Establishment of coordination headquarters for firefighting support activities

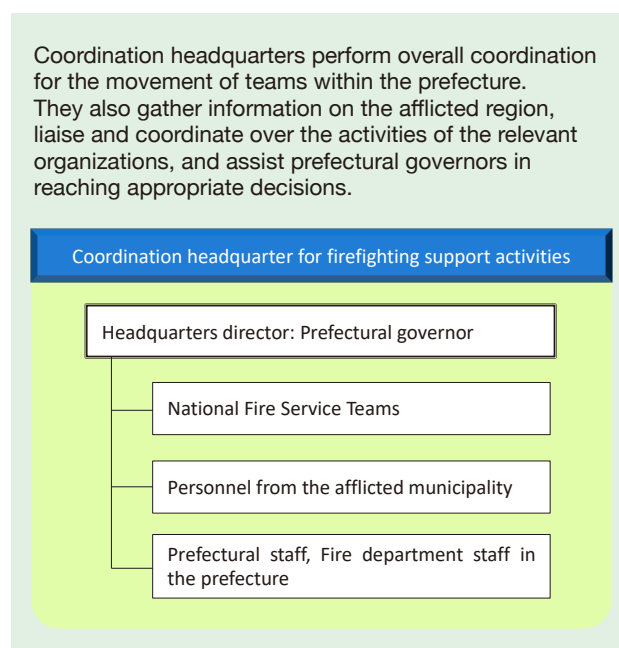
To ensure that the prefectural governor’s orders from (b) are carried out smoothly, the prefectural governors are to establish coordination headquarters

for firefighting support activities (hereafter referred to as “coordination headquarters”) in order to carry out the general coordination for measures like lending support for firefighting when National Fire-Service Teams are dispatched for this purpose. The coordination headquarters are tasked with handling tasks related to coordinating with the Japan Self-Defense Forces, police, and other relevant organizations. This is done in an effort to ensure that tasks related to general coordination over measures designed to support the firefighting activities carried out by the prefecture and municipalities within the prefecture in question are carried out smoothly. (Fig. 2-8-1)

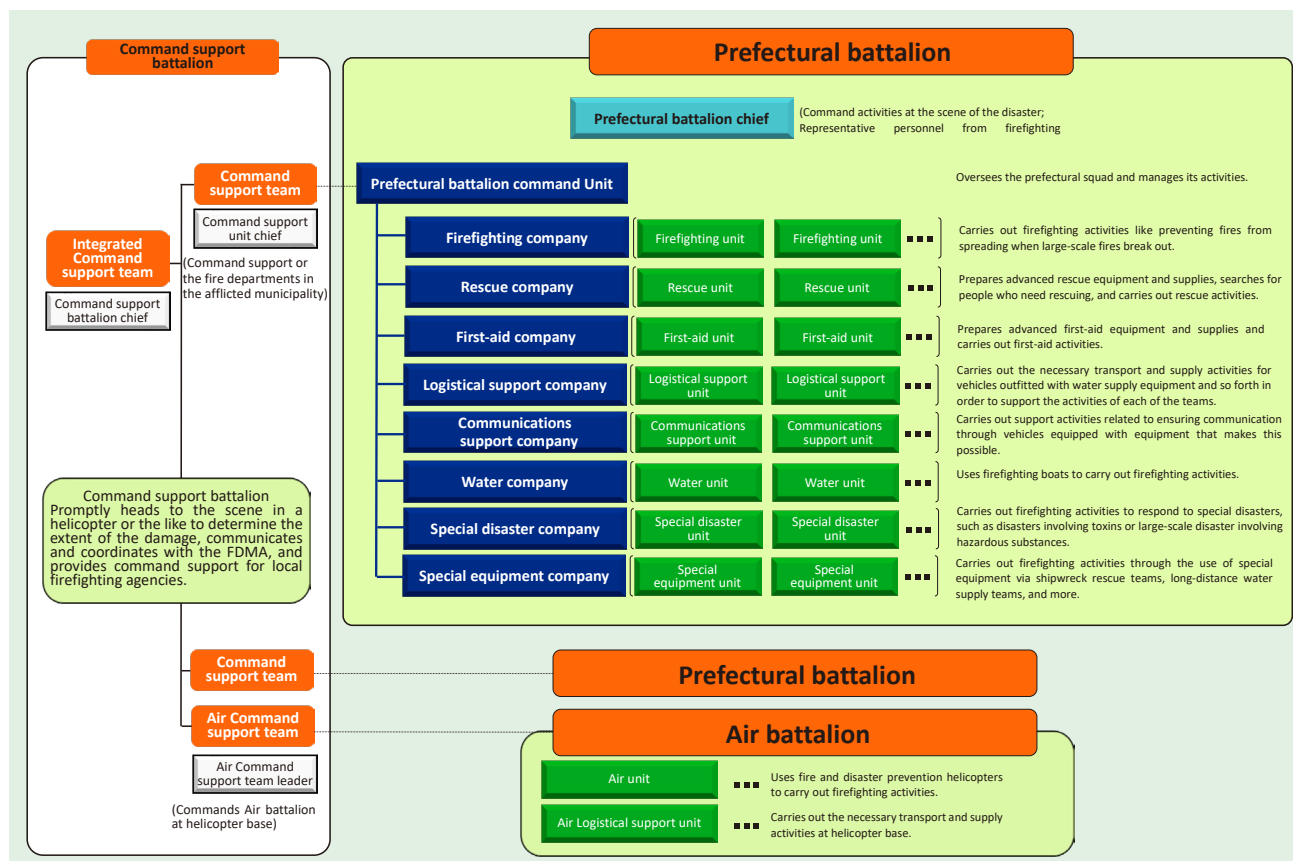
(d) Revisions to the requirements for the Commissioner of the FDMA to order the dispatch of National Fire-Service Teams

The dangers of earthquakes causing enormous damage in a localized manner as a result of active faults have been pointed out. It was stipulated that the Commissioner of the FDMA can order the governors of prefectures aside from the prefecture where the municipality in which the disaster occurred is located or the mayors of municipalities within the prefecture in question to take the necessary measures to dispatch their National Fire-Service Teams. Where this was previously limited to cases where the disaster was regarded as a large-scale disaster spanning two or more prefectures, now it can be done when it has been acknowledged that there is a special need to respond to the disaster in question, even when it is a large-scale disaster that has occurred solely within a single prefecture.

**Fig 2-8-1 Organization of coordination headquarter for firefighting support activities**



**Fig 2-8-2 Organization of teams comprising National Fire-Service Teams**





**Table 2-8-3 Tasks and organizations of special battalions**

Name	Mission	Comprising unit
Integrated Mobile Unit	After a request or instruction by the Director-General to mobilize, to mobilize promptly, to conduct firefighting activities urgently in the disaster area, and to collect and provide information that contributes to the smooth activities of the prefectural battalion in the case that the prefectural battalion follows.	Comprehensive Mobile Command Unit, some 3 Firefighting Units, some 3 Rescue Units, some 3 First-aid Units, Logistical Support Unit, and Communication Support Unit
National Fire-Service Team for Energy/Industrial Disaster	To conduct advanced and specialized firefighting activities quickly and accurately in response to special disasters in areas where energy and industrial infrastructure such as petroleum complexes and chemical plants are located.	Command Unit of National Fire-Service Team for Energy/Industrial Disaster, Special Disaster Company (equipped with large elevated water truck, hose extension vehicle with a large water cannon, chemical fire truck, large elevated water truck, and foam solution transport vehicle), Firefighting Company (equipped with chemical fire truck) In addition to the above Special Equipment Unit, Logistical Support Unit, Communications Support Unit, and Water Unit are added depending on local conditions.
NBC Disaster Battalion	To conduct advanced and specialized firefighting activities against NBC disasters in a prompt and accurate manner.	NBC Disaster Command Unit, Toxic and Hazardous Unit In addition to the above, Logistical Support Units etc. are added depending on local conditions.
Mobile Support Battalion for Landslide, Storm and flood	In response to landslides or wind and flood disasters, conduct firefighting activities using heavy equipment, etc., in cooperation with other prefectural battalions, etc., in a prompt and accurate manner.	Mobile Support Command Unit for Landslide, Storm and flood, Rescue unit (equipped with response vehicle for handling tsunamis and large-scale storm and flood damage and rescue work vehicle), Special Equipment Unit (equipped with heavy machinery and heavy machinery transport vehicle, amphibian motor vehicle and amphibian motor vehicle transport vehicle), Logistical Support Unit In addition to the above, necessary units are added depending on local conditions.

## (2) Organization of and Dispatch Plans for National Fire-Service Teams

Issues like the organization of and dispatch plans for National Fire-Service Teams are established within the Basic Plan set by the Minister of Internal Affairs and Communications. An overview of these issues is provided below.

### A. Organization of National Fire-Service Teams

#### (A) Command Support Battalion

The Command Support Battalion is tasked with the duty of urgently heading to afflicted regions via helicopter or the like when large-scale disasters or special disasters occur to gather information related to the disaster and convey this to the Commissioner of the FDMA, the governors of the relevant prefectures, and others. In addition, it has also been tasked with the duty of carrying out support activities to ensure that commands pertaining to National Fire-Service Teams are carried out smoothly within the afflicted region. The Command Support Battalion is comprised of Integrated Command Support team, Command Support team, and Air Command Support team.

#### (B) Prefectural Battalions

The Prefectural Battalion is a group of basic companies which are comprised of the teams required to aid with firefighting undertaken in afflicted regions from among a number of different companies. These include the Prefectural Battalion Command Unit, Firefighting company, Rescue company, Ambulance company, Logistic company, Communication company, Air company, Water company, Special Disaster company, and Special Equipment company established within the prefecture in question or municipalities within said prefecture. (Fig. 2-8-2)

#### (C) Air Battalion

The Air battalion is tasked to conduct aviation-related firefighting activities in the disaster area. It is composed of air units and, if necessary, air logistics support units.

#### (D) Special Battalions

Besides the prefectural battalions, there are special task forces: Integrated Mobile Unit, National Fire-Service Team for Energy/Industrial Disaster, NBC Disaster Battalion, Mobile Support Battalion for Landslide, Storm and flood. (Table 2-8-3)

### B. Dispatch Plans

#### (A) Basic Dispatch Plans

When large-scale disasters occur, the Commissioner of the FDMA makes efforts to gather information and closely coordinate with the prefectural governor of the afflicted prefecture and other officials. They also decide on whether or not it is necessary to dispatch National Fire-Service Teams, and take the measures to request or order their dispatch based on Article 44 of the Fire Organization Act. Dispatch plans are to be established ahead of time to enable their prompt and precise dispatch in such cases.

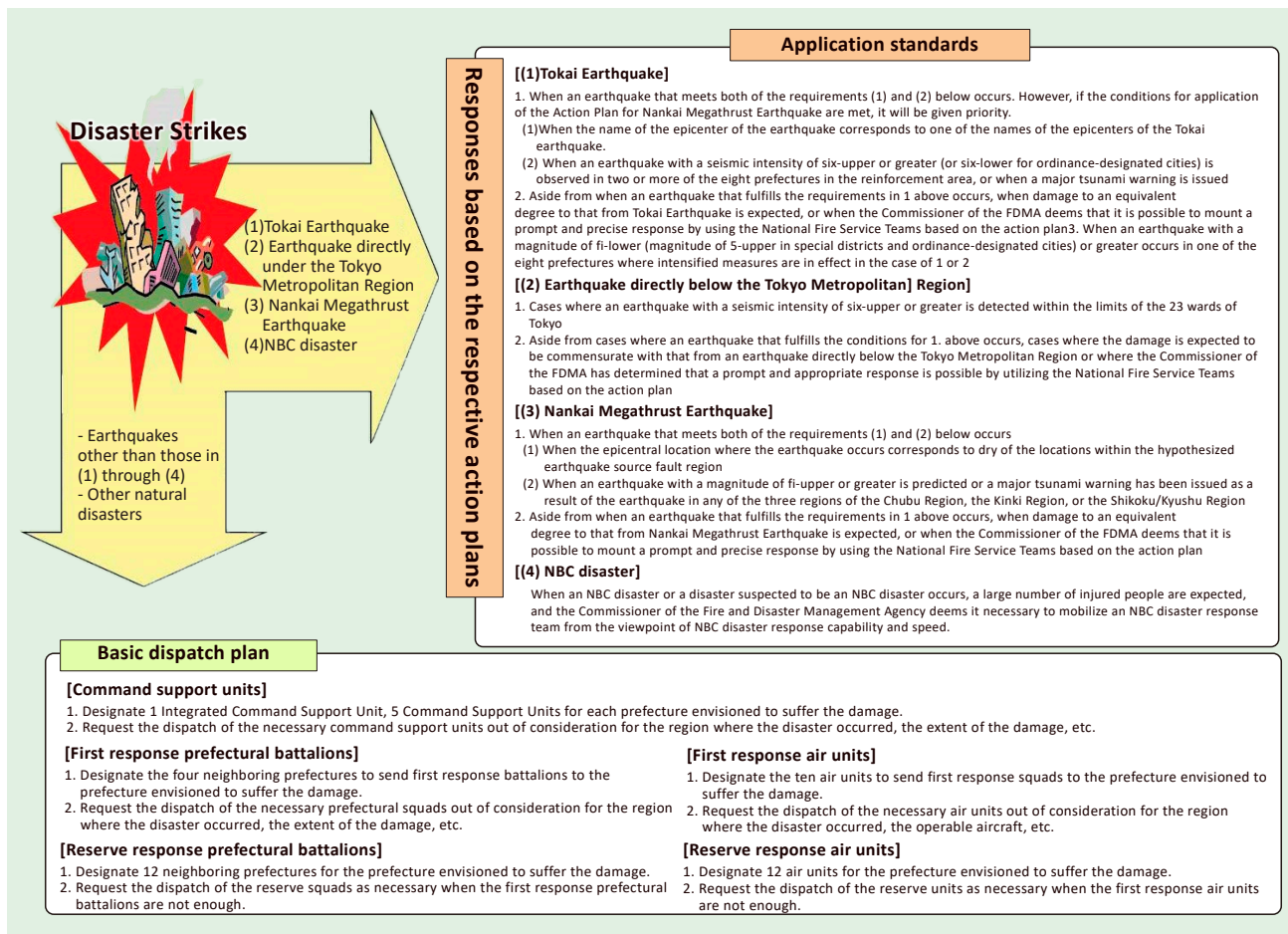
Specifically, for each prefecture in which a disaster occurs, they designate prefectural battalions that dispatched to provide support with a primary focus on neighboring prefectures as “first response prefectural battalions” and prefectural battalions that provide additional support according to the scale of the disaster as “reserve response prefectural battalions.”

#### (B) Rapid Dispatch Standards for when Large-scale Earthquakes Occur

When large-scale earthquakes occur, communications infrastructure is disrupted and a considerable length of time is needed in order to determine the overall extent of the damage, and it is possible that requests for dispatch may not be implemented quickly.

For this reason, the Commissioner of the FDMA has prefectural governors and municipal mayors from around the country prepare Requests for the Dispatch of National Fire-Service Teams pursuant to Article 44 of the Fire Organization Act in advance. The Implementation Guidelines on Rapid Dispatch of National Fire-Service Teams for Large-scale Earthquakes were enacted in July 2008, which contained content on matters like dispatching

Fig 2-8-3 Basic dispatch and action plans for National Fire-Service Teams



them the instant a large-scale earthquake occurs.

Then, in March 2015, these implementation guidelines were prescribed in the Guidelines on Requests for Assistance from National Fire-Service Teams.

### (C) Dispatch Plans for a Tokai Earthquake and Other Potential Earthquakes

It is envisioned that a Tokai Earthquake, Nankai Megathrust Earthquake, or earthquake directly below the Tokyo Metropolitan Region would produce considerable damage that would extend over multiple prefectures. The thinking is that the firefighting capabilities of just the first response prefectural battalions and reserve response prefectural battalions alone would be insufficient for this. Therefore, it has been decided that National Fire-Service Teams would be dispatched at a national scale for these.

Therefore, the FDMA has formulated guidelines and action plans for using National Fire-Service Teams for each of these disasters should they occur. This was done by envisioning a Tokai Earthquake, Nankai Megathrust Earthquake, and earthquake directly below the Tokyo Metropolitan Region, and is based on the response guidelines, estimates of the damage from such disasters, and other data from the Central Disaster Prevention Council. (Fig. 2-8-3)

For example, there is a National Fire-Service Team action plan for a Nankai Megathrust Earthquake that was formulated in March 2016. This plan determines sites to receive assistance in 37 other prefectures aside from the ten prefectures designated to receive priority

assistance, to which every National Fire-Service Team capable of providing assistance would be simultaneously and promptly deployed. What is more, the action plan for an earthquake directly below the Tokyo Metropolitan Region that was enacted in March 2017 decides on assistance providers from the 43 prefectures (excluding four prefectures designated as the prefectures receiving support), and states that every National Fire-Service Teams that can provide support is to promptly devote personnel to this all at once.

For an earthquake along the Nankai Trough, the report by the Working Group to Review Disaster Responses based on Seismic Observations and Evaluations for a Nankai Trough Earthquake from September 2017 indicated the course for a disaster response in the event that abnormal phenomena were observed along the Nankai Trough. Therefore, the entire policy for deploying National Fire-Service Teams for the Tokai Earthquake was revised and changed to the action plan until a new disaster response for the Nankai Trough is determined.

### (D) Operational plan for NBC disaster

When a large number of people are injured due to an NBC disaster, the firefighting capability of the firefighting organization with jurisdiction over the disaster area and the firefighting organization in the prefecture to which the disaster area belongs alone is considered to be insufficient, and it is necessary to implement advanced and specialized firefighting activities quickly and accurately. For this reason, a special operation plan has been established and

NBC disaster response units will be dispatched promptly.

#### (E) Assistance Plans by the Prefectures

Each prefecture formulates its own Implementation Plans for Assistance from National Fire-Service Teams based on the registration status of National Fire-Service Teams within the prefecture in question. These plans are based on consultations with the firefighting agencies of each prefecture in question with regard to the organization of prefectural battalions and other teams, meeting locations, information communication structures, and other necessary items concerning the prompt dispatch of National Fire-Service Teams to afflicted regions.

#### C. Plans for Receiving Assistance

Each prefecture formulates Plans for Receiving Assistance from National Fire-Service Teams by hypothesizing situations in which said prefecture itself falls victim to a disaster. This is done through consultations with the firefighting agencies within the prefecture over necessary matters regarding the acceptance of National Fire-Service Teams. And the fire departments must likewise formulate plans for receiving assistance while striving for consistency with the contents of the plans for receiving assistance formulated by the prefectures and the prefecture's regional firefighting plans for the sake of receiving National Fire-Service Teams in their region.

### (3) Number of National Fire-Service Teams Registered and Their Equipment

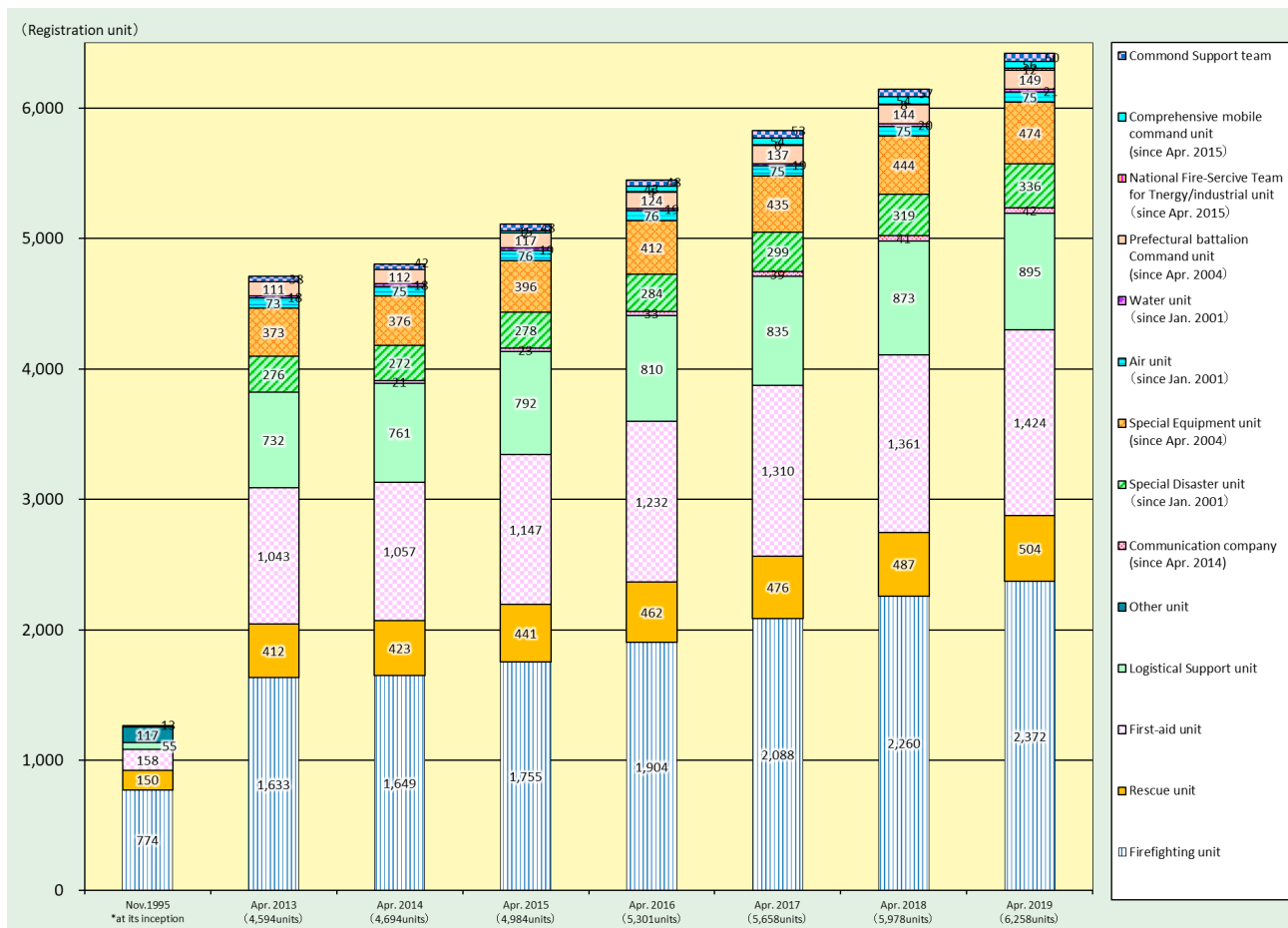
#### A. Number of teams registered

The stipulations of Paragraph 4, Article 45 of the Fire Organization Act states that the Commissioner of the FDMA must register National Fire-Service Teams based on applications to do so from the prefectural governors or municipal mayors.

Since the launch of the 1,267 National Fire-Service Teams in September 1995, there has been a growing recognition of the importance of their activities during disasters. As a result, the number of teams registered has been on the rise, and as of April 1, 2019, 6,258 teams have been registered from 723 fire departments nationwide (roughly 99% of the fire departments nationwide). This is almost fire times more than its launch. (**Attachment 2-8-1** untranslated, **Fig. 2-8-4**)

In March 2019, the basic plan was revised and a target for the number of teams registered was set for the end of FY2023 that would substantially increase the number of teams from its current level of roughly about 6,000 to roughly 6,600 teams. This is to be done because it is crucial to set in place a structure for deploying teams quickly and at a large scale in preparation for large-scale disasters such as a Nankai Trough Earthquake or an earthquake directly below the Tokyo Metropolitan Region, for which damage that is worse than that from the Great East Japan Earthquake is envisioned.

**Fig 2-8-4 Trends in registration number of National Fire-Service Teams**



**Table 2-8-4 Main allocation of vehicles and other equipment via the system for using equipment free of charge stipulated in Article 50 of the Fire Organization Act**

FY of allocation	Allocated vehicle, etc.	No. allocated			
2005	Helicopter	1 helicopter	2014	Operation Base Vehicle	4 vehicles
2006	Vehicle equipped with large blower	5 vehicles		Tsunami/Large-Scale Water Disaster Countermeasure Vehicle	2 vehicles
	Vehicle equipped with water cutter	5 vehicles		Water system for firefighting capable of handling disasters at energy and industrial infrastructure	2 systems
2007	Vehicle equipped with large decontamination system	5 vehicles		Helicopter movement management system	4 systems
2008	Special elevated work vehicle	5 vehicles	2015	Operation Base Vehicle	2 vehicles
	Fuel supply vehicle	6 vehicles		Tsunami/Large-Scale Water Disaster Countermeasure Vehicle	2 vehicles
2009	Helicopter movement management system	8 systems		System for firefighting capable of handling disasters at energy and industrial infrastructure	2 systems
	Special disaster response vehicle	10 vehicles		Drone for firefighting activities	2 systems
	Special elevated work vehicle	9 vehicles		Heavy machinery and heavy machinery transport vehicle	3 pairs
	Vehicle equipped with large decontamination system	8 vehicles		Vehicle equipped with large decontamination system	1 vehicle
	Fuel supply vehicle	2 vehicles		Helicopter movement management system	6 systems
	Firefighting system that uses ocean water	2 systems	2016	Operation Base Vehicle	2 vehicles
2010	Helicopter movement management system	2 systems		Tsunami/Large-Scale Water Disaster Countermeasure Vehicle	3 vehicles
	Infrared camera	1 system		Water system for firefighting capable of handling disasters at energy and industrial infrastructure	2 systems
	Type 1 support vehicle	47 vehicles		Vehicle equipped with large decontamination systems	1 vehicle
2011	Helicopter	2 helicopters	2017	Helicopter movement management system	5 systems
2012	Personnel transport vehicle	47 vehicles		Operation Base Vehicle	2 vehicles
	Equipment transport vehicle	46 vehicles		Water system for firefighting capable of handling disasters at energy and industrial infrastructure	2 systems
	All-terrain response vehicle	1 pair		Radio relay vehicle	3 vehicles
	Radio relay vehicle	21 vehicles		Vehicle equipped with large decontamination systems	1 vehicle
	Elevated rescue vehicle for large-scale earthquake disasters	3 pairs		Fuel supply vehicle	9 vehicles
	Heavy machinery and heavy machinery transport vehicle	19 pairs	Helicopter video transmission receiver	23 systems	
	Prefectural command team vehicle	45 vehicles	2018	Operation Base Vehicle	6 vehicles
	Fuel supply vehicle	30 vehicles		Tsunami/Large-Scale Water Disaster Countermeasure Vehicle	6 vehicles
	Type 1 support vehicle	17 vehicles		Water system for firefighting capable of handling disasters at energy and industrial infrastructure	4 systems
	Firefighting system that uses ocean water	1 system		All-terrain response vehicle type II and transport vehicle	2 pairs
	Special disaster response vehicle	1 vehicle		Information gathering drone	18 sets
	Special disaster work vehicle	2 vehicles		Chemical agent remote sensing equipment	3 vehicles
	Vehicle equipped with large decontamination system	4 vehicles		2019*	Tsunami/Large-Scale Water Disaster Counter measure Vehicle
	Helicopter movement management system	11 systems	Amphibian motor vehicle and amphibian motor vehicle transport vehicle		5 pairs
	Heli-Sat system	1 system	Operation Base Vehicle		1 vehicle
	2013	Operation Base Vehicle	6 vehicles		Heavy machinery and heavy machinery transport vehicles
Tsunami/Large-Scale Water Disaster Countermeasure Vehicle		15 vehicles	High-performance lifeboats		36 vehicles
Mobile communication vehicle		33 vehicles			
Helicopter		2 helicopters			
	Helicopter movement management system	4 systems			
	Heli-Sat system	4 systems			
	Heli-Sat camera	3 systems			

(Note) \* indicates equipment scheduled to be allocated in FY2018

(Note) \* indicates equipment scheduled to be allocated in FY2018

## B. Equipment

Since they were first launched, the FDMA has formulated standards for the equipment for National Fire-Service Teams. Moreover, since their enshrinement into law in 2003, it has included provisions for this in its basic plan as it has worked to round-out their line-up of equipment. Starting from 2006, government subsidy measures have been taken through a subsidy for outfitting National Fire-Service Teams with facilities and equipment. Through this, progress has been made in equipping them with special disaster-response fire pump vehicles, rescue work vehicles, special disaster-response ambulances, as well as the support vehicles active teams need to act in a self-contained manner in afflicted regions, and also fiberscopes and other sophisticated rescue equipment and supplies.

What is more, the stipulations in Article 50 of the Fire Organization Act provide for a system for using equipment free of charge. Under this system, some of the equipment needed by National Fire-Service Teams for their team activities and logistical activities is allocated to fire departments and other sites throughout Japan. Such equipment includes systems for water sources for firefighting capable of handling disasters at energy and industrial infrastructure, response vehicles for handling tsunamis and large-scale storm and flood damage, vehicles that can function as mobile bases, and more. (Table 2-8-4)

Moreover, the emergency and disaster prevention and reduction business debentures (100% allocations, 70% tax grant rate) that were established in FY2011 were expanded in FY2013 to newly encompass “Equipment for vehicles for the functional enhancement of National Fire-

Service Teams” and “Facilities to serve as bases for wide-area activities for National Fire-Service Teams.”

In FY2014, base facilities for rescue activities and the like were added to the list of facilities eligible for aid via subsidies for the costs of outfitting fire and disaster prevention equipment. Such facilities consist of helicopter landing pads, facilities for storing equipment and supplies, and private refueling facilities. Through this, progress has

been made with setting in place base facilities that will allow National Fire-Service Teams to carry out rescue and other activities in a self-reliant manner.

The FDMA will continue working to round-out and enhance the equipment of National Fire-Service Teams in a systematic manner to ensure that they can effectively carry out their activities.

–omitted–



## Attachment 1-1-2 Extent of fire damage by prefecture

(During 2018)

Classification	No. of fires							No. of buildings burned				
	Total	Buildings	Forests	Vehicles	Ships	Aircraft	Other	Total	Totally destroyed	Half destroyed	Partially destroyed	Minor fire
Prefecture												
Hokkaido	1,685	1,062	31	270	3	0	319	1,379	336	113	392	538
Aomori	456	285	24	48	1	0	98	466	171	31	147	117
Iwate	384	206	33	57	1	0	87	391	169	27	116	79
Miyagi	650	369	15	78	0	0	188	570	148	33	157	232
Akita	291	166	14	39	1	0	71	307	124	14	107	62
Yamagata	305	154	8	25	0	0	118	241	86	10	72	73
Fukushima	632	321	56	67	2	0	186	557	219	32	144	162
Ibaraki	1,158	557	57	104	0	0	440	1,031	397	54	259	321
Tochigi	636	327	31	78	0	0	200	557	209	32	165	151
Gunma	717	374	20	78	0	0	245	661	234	40	176	211
Saitama	1,819	1,006	14	206	0	0	593	1,550	313	72	438	727
Chiba	1,924	960	86	175	3	0	700	1,426	372	82	327	645
Tokyo	4,025	2,725	4	227	3	0	1,066	3,052	104	102	552	2,294
Kanagawa	1,886	1,148	10	173	3	0	552	1,505	209	66	354	876
Niigata	571	377	22	70	1	0	101	642	180	42	193	227
Toyama	170	115	5	29	0	0	21	147	41	10	43	53
Ishikawa	243	134	14	38	0	0	57	205	53	8	60	84
Fukui	199	108	4	33	1	0	53	185	44	15	52	74
Yamanashi	349	147	17	44	0	0	141	261	95	21	79	66
Nagano	941	382	36	85	0	0	438	570	195	50	145	180
Gifu	725	336	33	56	0	0	300	543	176	34	153	180
Shizuoka	1,045	557	25	113	3	0	347	791	178	54	200	359
Aichi	2,082	1,118	37	228	5	0	694	1,473	230	89	432	722
Mie	738	326	31	81	2	0	298	521	160	31	134	196
Shiga	406	205	10	44	0	0	147	303	73	17	66	147
Kyoto	551	334	11	53	0	0	153	458	77	31	114	236
Osaka	2,030	1,440	8	153	2	0	427	1,866	186	87	479	1,114
Hyogo	1,762	901	76	170	5	0	610	1,161	200	50	330	581
Nara	454	210	16	35	0	0	193	310	73	20	91	126
Wakayama	336	162	15	29	3	0	127	224	61	17	51	95
Tottori	223	100	9	17	0	0	97	158	51	15	28	64
Shimane	309	118	47	21	1	0	122	182	64	3	42	73
Okayama	751	369	70	76	1	0	235	647	231	46	183	187
Hiroshima	881	426	83	75	2	0	295	628	153	36	174	265
Yamaguchi	518	214	34	40	5	0	225	383	135	20	104	124
Tokushima	275	135	16	32	0	0	92	197	59	13	60	65
Kagawa	338	163	26	29	1	0	119	236	66	23	87	60
Ehime	411	256	14	30	2	0	109	429	129	29	116	155
Kochi	308	151	19	23	0	0	115	219	75	12	52	80
Fukuoka	1,354	750	29	111	2	0	462	981	197	56	251	477
Saga	311	133	25	33	0	1	119	201	68	8	50	75
Nagasaki	537	225	38	37	8	0	229	340	102	21	87	130
Kumamoto	705	298	58	77	0	0	272	463	115	17	131	200
Oita	372	170	36	23	3	0	140	412	242	9	72	89
Miyazaki	444	219	30	47	0	0	148	321	96	20	100	105
Kagoshima	605	316	24	48	3	0	214	508	207	32	136	133
Okinawa	469	209	42	55	2	0	161	304	35	14	132	123
Prefectural total	37,981	20,764	1,363	3,660	69	1	12,124	29,962	7,138	1,658	7,833	13,333
Sapporo city	435	310	0	62	0	0	63	367	27	20	103	217
Sendai City	254	162	0	24	0	0	68	190	17	7	39	127
Saitama City	319	175	0	31	0	0	113	245	35	14	66	130
Chiba City	261	137	3	37	0	0	84	165	15	7	43	100
Special wards	2,913	2,049	0	161	3	0	700	2,215	31	77	388	1,719
Yokohama City	702	421	0	63	3	0	215	498	38	23	123	314
Kawasaki City	324	210	0	24	0	0	90	239	15	5	50	169
Sagamihara City	142	86	4	17	0	0	35	110	17	10	22	61
Niigata City	124	94	0	15	1	0	14	165	43	11	64	47
Shizuoka City	177	111	1	18	1	0	46	143	10	14	24	95
Hamamatsu City	206	112	7	20	0	0	67	177	50	14	54	59
Nagoya City	569	367	1	59	1	0	141	423	23	12	144	244
Kyoto City	230	173	3	13	0	0	41	240	25	20	66	129
Osaka City	741	555	0	52	1	0	133	648	17	29	187	415
Sakai City	194	133	0	12	0	0	49	158	7	7	41	103
Kobe City	460	276	8	43	2	0	131	314	28	9	74	203
Okayama City	166	88	5	20	1	0	52	145	37	12	39	57
Hiroshima City	244	155	6	18	0	0	65	214	29	14	56	115
Kitakyushu City	237	133	1	22	0	0	81	168	28	10	42	88
Fukuoka City	309	206	5	19	1	0	78	253	13	9	74	157
Kumamoto City	181	118	4	19	0	0	40	164	23	7	41	93
21 city total	9,188	6,071	48	749	14	0	2,306	7,241	528	331	1,740	4,642

(Note) The "21 city total" is found within the prefectural total.

## Attachment 1-1-2 Extent of fire damage by prefecture (continued)

(During 2018)

Classification	Area burned			No. of casualties		No. of households affected				No. of people affected
	Building floor area (㎡)	Building surface area(㎡)	Forests (a)	Fatalities	Injured	Total	Totally destroyed	Half destroyed	Minor destruction	
Prefecture										
Hokkaido	58,962	5,391	5,835	68	299	827	145	81	601	1,638
Aomori	22,873	2,642	1,532	29	84	267	92	23	152	639
Iwate	27,446	4,268	5,897	28	53	169	65	14	90	418
Miyagi	22,486	1,325	345	26	134	340	82	21	237	814
Akita	17,087	1,712	1440	18	46	140	51	4	85	320
Yamagata	11,495	1,305	48	13	54	121	38	4	79	317
Fukushima	27,864	3,034	1,336	42	123	275	84	17	174	631
Ibaraki	39,639	3,154	702	34	164	535	188	34	313	1,168
Tochigi	27,245	2,043	616	29	89	315	104	18	193	679
Gunma	30,620	2,081	550	36	99	302	101	21	180	661
Saitama	51,802	5,603	642	65	281	979	182	52	745	2,288
Chiba	38,710	3,086	342	75	298	804	184	58	562	1,774
Tokyo	20,297	12,460	442	88	808	2,225	180	170	1,875	4,282
Kanagawa	43,913	6,290	29	73	352	1,170	181	74	915	2,528
Niigata	31,303	2,552	351	33	133	377	94	31	252	933
Toyama	6,770	1095	34	13	49	88	22	10	56	232
Ishikawa	6,375	793	119	15	31	105	28	7	70	220
Fukui	26,527	564	29	15	26	118	32	10	76	305
Yamanashi	10,560	1,301	1,723	8	38	143	51	6	86	305
Nagano	25,907	1,672	2,467	47	151	304	95	23	186	722
Gifu	21,389	1,946	175	24	96	263	80	21	162	619
Shizuoka	23,526	5,742	380	40	143	422	96	34	292	1,007
Aichi	52,120	7,454	278	70	287	980	183	76	721	2,203
Mie	28,587	2,041	290	22	87	248	71	24	153	576
Shiga	11,627	1739	252	17	60	166	33	12	121	392
Kyoto	15,127	1,550	129	22	101	303	42	30	231	611
Osaka	40,366	6,545	112	85	501	1,586	232	92	1,262	3,212
Hyogo	31,505	4,493	907	72	297	785	175	46	564	1,631
Nara	17,218	1,857	487	10	71	176	45	7	124	438
Wakayama	11,809	332	361	13	46	137	36	6	95	295
Tottori	8,427	158	254	6	36	74	22	9	43	203
Shimane	8,039	403	1187	12	38	79	24	3	52	200
Okayama	27,957	1,815	1582	28	143	331	119	22	190	735
Hiroshima	22,429	1,934	2416	35	116	418	81	30	307	886
Yamaguchi	18,284	670	404	23	71	188	67	9	112	439
Tokushima	9,701	952	580	10	32	114	31	7	76	243
Kagawa	7,860	737	203	13	34	146	42	12	92	318
Ehime	18,652	1,361	175	18	56	230	69	11	150	519
Kochi	8,157	436	326	4	33	115	35	5	75	254
Fukuoka	33,861	3,199	1,933	36	195	607	124	36	447	1,343
Saga	10,047	469	103	10	39	101	34	8	59	261
Nagasaki	13,742	606	168	27	57	215	60	15	140	537
Kumamoto	15,704	2,337	21056	17	83	253	59	9	185	600
Oita	10,754	1,079	219	9	34	110	37	5	68	214
Miyazaki	14,811	1,597	1,306	13	46	167	54	8	105	403
Kagoshima	28,172	2,221	503	23	68	254	108	5	141	487
Okinawa	5,831	1,937	359	13	32	108	20	13	75	258
Prefectural total	1,063,583	117,981	60,624	1,427	6,114	18,180	3,978	1,233	12,969	39,758
Sapporo city	6,947	1,455	0	30	120	313	33	21	259	569
Sendai City	2,982	68	0	11	64	125	18	3	104	252
Saitama City	5,406	1090	0	9	46	154	38	7	109	364
Chiba City	2,237	624	15	2	48	94	22	2	70	198
Special wards	11,024	4,734	0	63	515	1,611	120	131	1,360	3,002
Yokohama City	6,478	2,055	0	23	118	409	48	26	335	882
Kawasaki City	2,582	654	0	13	71	246	27	13	206	500
Sagamihara City	2,661	208	2	9	37	99	14	7	78	204
Niigata City	6,918	692	0	6	40	136	31	5	100	283
Shizuoka City	2,336	134	0	11	20	113	19	16	78	233
Hamamatsu City	5,939	4558	52	6	30	86	22	7	57	211
Nagoya City	5,265	1,106	2	21	115	362	39	20	303	726
Kyoto City	5,850	523	16	12	60	190	22	26	142	358
Osaka City	5,042	2,852	0	31	189	604	43	45	516	1,094
Sakai City	1,985	596	0	4	36	136	29	5	102	257
Kobe City	3,854	868	126	18	68	237	48	12	177	457
Okayama City	4,569	270	50	5	24	89	20	10	59	185
Hiroshima City	3,699	1232	399	8	48	209	29	13	167	416
Kitakyushu City	4,733	406	1,700	5	30	96	20	5	71	215
Fukuoka City	2,213	711	10	10	66	177	22	9	146	324
Kumamoto City	3,302	1032	11	4	27	119	14	6	99	263
21 city total	96,022	25,868	2,383	301	1,772	5,605	678	389	4,538	10,993

(Note) The "21 city total" is found within the prefectural total.

## Attachment 1-1-2 Extent of fire damage by prefecture (continued)

(During 2018) (Unit: 1,000 yen)

Classification	Amount of damages									
	Total	Building			Forests	Vehicles	Ships	Aircraft	Other	Explosions
Prefecture		Subtotal	Buildings	Contents						
Hokkaido	2,934,379	2,427,939	1,749,400	678,539	8127	159,993	11,094	0	313,091	14135
Aomori	2,257,161	2,023,420	757,685	1,265,735	3,176	23,034	1,276	0	15,566	190,689
Iwate	1,318,464	1,106,907	932,616	174,291	47,829	45,092	28772	0	51,054	38,810
Miyagi	1,545,862	1,375,690	993,553	382,137	1,619	78,139	0	0	89,391	1023
Akita	611,156	573,819	421,567	152,252	11,673	16,704	5400	0	3,556	4
Yamagata	652,521	621,736	498,253	123,483	6,973	14,817	0	0	8,995	0
Fukushima	1,331,728	1,161,892	687,878	474,014	1,491	120,849	5703	0	41,793	0
Ibaraki	3,740,465	3,436,830	2,487,199	949,631	552	58,451	0	0	240,362	4270
Tochigi	1,683,332	1,606,887	947,439	659,448	5006	51,864	0	0	19,077	498
Gunma	1,760,373	1,681,756	1,124,311	557,445	1828	48,095	0	0	22,423	6,271
Saitama	5,163,161	5,004,094	2,693,691	2,310,403	13,096	110,095	0	0	30,560	5,316
Chiba	3,266,907	2,795,972	2,217,975	577,997	760	140,528	603	0	328,315	729
Tokyo	6,116,531	5,870,756	3,285,376	2,585,380	9150	93,155	27515	0	112,765	3,190
Kanagawa	4,873,484	4,653,750	2,164,936	2,488,814	0	88,905	4537	0	75,677	50,615
Niigata	1,383,082	1,289,083	987,764	301,319	50	47,984	28968	0	10,867	6130
Toyama	717,373	706,259	365,370	340,889	0	8,165	0	0	2,949	0
Ishikawa	410,339	364,271	265,860	98,411	5310	8,366	0	0	32,392	0
Fukui	2,635,130	2,341,471	1,238,106	1,103,365	578	32,053	116	0	260,912	0
Yamanashi	787,216	696,490	447,294	249,196	2,448	47,570	0	0	40,708	0
Nagano	1,265,815	1,178,312	937,419	240,893	24,334	39,861	0	0	15,934	7,374
Gifu	1,659,085	1,606,056	841,895	764,161	394	33,772	0	0	18,863	0
Shizuoka	2,876,733	2,625,006	1,764,296	860,710	1,059	79,820	131540	0	38,686	622
Aichi	4,978,328	4,727,648	2,926,647	1,801,001	359	151,217	1548	0	82,639	14,917
Mie	1,442,387	1,389,285	862,275	527,010	909	37,779	1,327	0	12,777	310
Shiga	791,731	715,370	527,684	187,686	1271	61,094	0	0	11,926	2,070
Kyoto	1,099,774	1,076,014	753,112	322,902	258	12,405	0	0	10,675	422
Osaka	6,061,516	5,191,358	3,025,809	2,165,549	160	49,348	102	0	810,404	10,144
Hyogo	2,785,734	2,568,860	1,934,921	633,939	963	151,667	9,131	0	43,283	11,830
Nara	1,481,635	1,465,985	786,193	679,792	1,143	11,438	0	0	3,069	0
Wakayama	658,658	627,899	379,532	248,367	471	6,659	8151	0	13,870	1608
Tottori	282,086	274,802	221,167	53,635	16	4,950	0	0	771	1547
Shimane	374,963	345,147	258,466	86,681	2689	13,227	55	0	5,900	7945
Okayama	1,445,201	1,336,085	938,626	397,459	2,441	42,831	243	0	63,481	120
Hiroshima	1,846,105	1,632,655	1,071,941	560,714	1020	63,324	3592	0	145,514	0
Yamaguchi	868,156	832,255	603,652	228,603	167	22,627	964	0	12,112	31
Tokushima	841,959	801,947	464,272	337,675	3474	19,497	0	0	17,041	0
Kagawa	562,573	540,817	355,271	185,546	0	5,259	3162	0	13,335	0
Ehime	877,452	801,699	544,453	257,246	263	14,016	22	0	58,218	3234
Kochi	327,017	312,480	229,029	83,451	224	10,346	0	0	3,967	0
Fukuoka	2,681,586	1,919,339	1,436,356	482,983	76	52,156	9,615	0	16,257	684143
Saga	1,210,260	459,280	374,357	84,923	236	18,459	0	730000	2,280	5
Nagasaki	1,318,206	718,534	565,682	152,852	57	16,955	570,942	0	11,613	105
Kumamoto	795,112	731,054	474,177	256,877	11,122	37,598	0	0	15,129	209
Oita	344,800	329,667	262,417	67,250	308	6,693	666	0	6,543	923
Miyazaki	714,568	646,852	444,401	202,451	27,074	36,815	0	0	3,812	15
Kagoshima	1,239,885	1,199,786	675,441	524,345	1,666	19,374	1,356	0	14,673	3030
Okinawa	607,252	559,325	336,138	223,187	547	14,219	2500	0	18,660	12001
Prefectural total	84,627,241	76,352,539	48,261,902	28,090,637	202,367	2,227,265	858,900	730,000	3,171,885	1,084,285
Sapporo city	483,322	460,273	318,657	141,616	0	9,199	0	0	643	13207
Sendai City	297,459	273,681	194,654	79,027	0	23,216	0	0	562	0
Saitama City	526,722	507,249	409,039	98,210	0	13,698	0	0	5,775	0
Chiba City	363,240	242,975	218,036	24,939	0	28,902	0	0	91,279	84
Special wards	2,344,853	2,238,979	1,583,150	655,829	0	69,029	27515	0	7,648	1,682
Yokohama City	605,195	564,390	465,370	99,020	0	22,411	4507	0	13,832	55
Kawasaki City	263,427	241,373	189,512	51,861	0	4,477	0	0	17,577	0
Sagamihara City	262,991	209,894	157,202	52,692	0	2,034	0	0	1,138	49925
Niigata City	414,699	373,479	296,688	76,791	0	7,184	28968	0	5,068	0
Shizuoka City	230,428	210,763	172,016	38,747	0	14,184	0	0	5,309	172
Hamamatsu City	588,441	542,171	429,507	112,664	50	29,209	0	0	17,011	0
Nagoya City	619,529	596,487	428,303	168,184	0	21,347	0	0	1,695	0
Kyoto City	479,618	472,959	412,949	60,010	226	2,948	0	0	3,063	422
Osaka City	511,311	485,414	293,359	192,055	0	17,893	1	0	6,351	1652
Sakai City	1,017,119	1,003,401	150,049	853,352	0	5,133	0	0	8,344	241
Kobe City	424,519	374,094	269,677	104,417	0	14,388	3534	0	32,503	0
Okayama City	303,345	296,746	177,380	119,366	543	3,661	243	0	2,152	0
Hiroshima City	512,295	389,000	198,795	190,205	410	16,648	0	0	106,237	0
Kitakyushu City	176,499	164,613	103,778	60,835	0	8,317	0	0	3405	164
Fukuoka City	126,658	120,497	90,291	30,206	0	1,500	1,615	0	2,816	230
Kumamoto City	211,894	198,873	101,468	97,405	0	8,636	0	0	4,235	150
21 city total	10,763,564	9,967,311	6,659,880	3,307,431	1,229	324,014	66,383	0	336,643	67,984

(Note) The "21 city total" is found within the prefectural total.

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## Attachment 1-2-1 Trends in the number of facilities for hazardous material

(As of March 31 of each year)

Year	Types of manufacturing facilities, etc.	Net total	Manufacturing facilities	Storage facilities								Handling facilities					
				Subtotal	Indoor storage facilities	Outdoor tank storage facilities	Indoor tank storage facilities	Underground storage facilities	Simple tank storage facilities	Mobile tank storage facilities	Outdoor storage facilities	Subtotal	Fuel supply depots	Class 1 sales handling facilities	Class 2 sales handling facilities	Transfer handling facilities	General outlets
1959		95,207	2,523	63,303	23,566	19,090	2,048	5,484	7,237	3,527	2,351	29,381	19,937	1,702			7,742
1967		213,526	3,008	140,842	34,163	48,975	8,863	23,891	4,648	15,190	5,112	69,676	42,347	2,059			25,270
1968		246,767	3,164	157,456	36,523	53,938	9,993	28,243	4,731	17,856	6,172	86,147	49,041	2,478			34,628
1969		279,012	3,309	175,150	38,880	59,504	11,172	33,142	4,793	20,556	7,103	100,553	54,060	2,907			43,586
1970		308,784	3,459	192,155	40,709	64,693	12,334	38,852	4,767	22,645	8,155	113,170	58,096	3,274			51,800
1971		346,113	3,684	213,883	43,254	71,320	13,611	45,880	4,849	25,396	9,573	128,546	62,749	3,553			62,244
1972		377,123	3,789	231,972	44,872	76,090	14,667	52,132	4,805	28,484	10,922	141,362	66,638	3,722	91		70,911
1973		410,158	3,929	251,372	46,769	81,388	15,575	58,913	4,748	32,139	11,840	154,857	71,049	3,697	163		79,948
1974		461,500	4,037	288,771	50,253	91,596	16,840	68,423	4,774	36,049	20,836	168,692	74,697	3,763	258		89,974
1975		495,161	3,961	312,009	53,239	97,846	17,534	75,642	4,578	39,364	23,806	179,191	76,879	3,727	319	1,148	97,118
1976		512,675	4,035	323,827	55,140	99,401	17,936	80,906	4,540	41,909	23,995	184,813	78,508	3,717	374	1,225	100,989
1977		527,118	4,104	333,440	56,772	99,626	18,236	85,874	4,496	44,266	24,170	189,574	79,998	3,675	464	1,229	104,208
1978		539,532	4,124	341,341	57,819	99,456	18,632	90,734	4,286	46,333	24,081	194,067	81,288	3,626	513	1,251	107,389
1979		552,597	4,184	349,777	58,528	98,984	18,929	95,823	4,194	49,427	23,892	198,636	82,900	3,538	541	1,316	110,341
1980		575,376	4,272	366,356	60,165	100,373	19,451	104,193	4,187	52,350	25,637	204,748	84,588	3,462	604	1,357	114,737
1981		587,052	4,346	373,465	61,554	97,509	19,923	109,755	4,076	54,986	25,662	209,241	86,056	3,416	647	1,366	117,756
1982		596,575	4,393	379,752	62,789	97,007	20,013	113,398	3,953	57,126	25,466	212,430	86,962	3,351	667	1,382	120,068
1983		601,905	4,435	382,914	63,440	96,341	19,955	115,724	3,871	58,662	24,921	214,556	87,678	3,284	705	1,380	121,509
1984		607,040	4,477	386,406	63,598	96,057	19,878	117,715	3,742	61,019	24,397	216,157	88,143	3,221	729	1,391	122,673
1985		613,364	4,560	390,825	63,878	95,685	19,831	119,749	3,638	64,393	23,651	217,979	88,582	3,124	744	1,400	124,129
1986		617,540	4,598	393,419	64,081	94,998	19,621	121,254	3,531	66,998	22,936	219,523	88,882	3,040	739	1,402	125,460
1987		620,783	4,657	395,877	63,980	94,334	19,465	122,509	3,435	69,976	22,178	220,249	88,890	2,939	758	1,397	126,265
1988		574,720	4,677	397,687	63,693	93,497	19,354	123,402	3,361	72,957	21,423	172,356	89,088	2,845	766	1,381	78,276
1989		578,881	4,722	400,597	63,562	93,105	19,150	124,374	3,288	76,451	20,667	173,562	89,506	2,768	765	1,372	79,151
1990		582,911	4,775	403,577	63,426	92,778	18,955	125,630	3,199	79,308	20,281	174,559	89,814	2,696	776	1,360	79,913
1991		561,184	4,774	385,975	61,350	87,950	17,999	125,874	2,354	71,596	18,852	170,435	89,388	2,630	657	1,373	76,387
1992		562,980	4,917	387,019	61,522	87,550	17,710	126,599	2,266	73,111	18,261	171,044	89,616	2,554	640	1,369	76,865
1993		562,250	4,975	386,022	61,285	87,038	17,459	126,706	2,212	73,699	17,623	171,253	89,996	2,464	652	1,377	76,764
1994		560,790	5,013	383,979	60,862	86,272	17,168	126,543	2,169	73,704	17,261	171,798	90,647	2,395	647	1,380	76,729
1995		561,295	5,046	383,683	60,304	85,764	16,880	126,533	2,089	75,307	16,806	172,566	91,418	2,321	647	1,382	76,798
1996		561,094	5,071	382,941	59,824	85,114	16,598	126,552	2,040	76,575	16,238	173,082	92,037	2,256	660	1,378	76,751
1997		560,108	5,126	382,409	59,221	84,553	16,315	126,617	1,965	77,881	15,857	172,573	91,583	2,196	652	1,365	76,777
1998		556,647	5,159	380,337	58,697	83,902	16,133	126,218	1,906	78,184	15,297	171,151	90,226	2,146	641	1,359	76,779
1999		551,371	5,156	377,229	58,073	82,877	15,848	125,481	1,828	78,404	14,718	168,986	88,382	2,075	645	1,350	76,534
2000		546,043	5,145	374,034	57,246	81,646	15,497	124,558	1,768	79,027	14,292	166,864	86,616	2,017	638	1,343	76,250
2001		542,068	5,160	371,351	56,722	80,260	15,311	123,964	1,703	79,802	13,589	165,557	85,182	1,963	631	1,331	76,450
2002		537,825	5,183	368,561	56,010	79,264	15,022	123,096	1,646	80,356	13,167	164,081	83,869	1,876	625	1,322	76,389
2003		530,484	5,085	363,829	55,178	77,631	14,709	121,795	1,586	80,194	12,736	161,570	82,371	1,807	618	1,288	75,486
2004		523,341	5,076	358,786	54,577	76,147	14,368	119,988	1,514	79,804	12,388	159,479	80,814	1,737	611	1,262	75,055
2005		514,990	5,050	352,872	54,337	74,724	14,086	117,491	1,446	78,683	12,105	157,068	79,104	1,681	600	1,250	74,433
2006		506,245	5,058	346,532	53,770	73,428	13,803	114,564	1,384	77,630	11,953	154,655	77,642	1,632	591	1,241	73,549
2007		496,789	5,107	339,728	53,720	72,213	13,363	111,204	1,307	76,262	11,659	151,954	76,310	1,584	583	1,226	72,251
2008		486,812	5,121	332,859	53,473	70,898	12,965	108,292	1,247	74,513	11,471	148,832	74,388	1,523	567	1,215	71,139
2009		475,989	5,154	325,590	53,182	69,756	12,574	105,206	1,204	72,387	11,281	145,245	72,121	1,480	554	1,208	69,882
2010		465,685	5,164	318,562	52,637	68,606	12,287	102,417	1,170	70,232	11,213	141,959	70,005	1,428	551	1,190	68,785
2011		455,829	5,152	311,996	52,219	67,470	11,923	99,383	1,141	68,746	11,114	138,681	67,990	1,381	542	1,179	67,589
2012		447,277	5,150	305,975	51,516	66,294	11,679	96,120	1,114	68,299	10,953	136,152	66,470	1,333	537	1,153	66,659
2013		436,918	5,160	299,142	51,245	65,330	11,502	91,255	1,101	67,916	10,793	132,616	64,593	1,293	538	1,151	65,041
2014		428,541	5,154	293,544	50,888	64,206	11,296	87,831	1,060	67,665	10,598	129,843	63,222	1,245	529	1,142	63,705
2015		422,029	5,106	289,034	50,553	63,093	11,021	85,499	1,019	67,498	10,351	127,889	62,269	1,209	518	1,127	62,766
2016		416,234	5,088	284,849	50,201	62,120	10,802	83,341	1,002	67,170	10,213	126,297	61,401	1,178	510	1,111	62,097
2017		410,651	5,096	280,863	50,023	61,124	10,586	81,417	986	66,733	9,994	124,692	60,585	1,138	499	1,098	61,372
2018		405,238	5,093	276,879	49,811	60,360	10,386	79,723	961	65,806	9,832	123,266	59,715	1,107	493	1,084	60,867
2019		400,639	5,098	273,641	49,717	59,699	10,170	77,988	940	65,425	9,702	121,900	58,865	1,078	482	1,077	60,398

(Notes) 1 Prepared based on "The Survey on Regulation Work of Hazardous Materials".

2 1959 is as of September 30.

3 With regard to the numbers in 2011 and 2012, because of the influence of the Great East Japan Earthquake, the numbers for the Rikuzentakata City Fire Department in Iwate Prefecture and the Futaba Fire Department in Fukushima Prefecture were calculated based on the numbers at the time of last fiscal year's survey (as of March 31, 2010).

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**Attachment 2-1-2 Trends in the number of firefighting agencies and volunteer firefighter** (As of April 1 of each year)

FY	Category	Fire departments				Volunteer fire corps			
		Fire departments	Unions among these	Fire stations	Branch offices	Firefighters	Volunteer fire corps	Divisions	Standing volunteer fire corps
1956		383	6	465	713	31,864	5,332	-	101
1957		406	6	488	735	32,745	4,484	-	107
1958		429	6	507	778	33,729	4,304	-	104
1959		438	6	533	831	35,168	4,153	-	93
1960		445	3	562	833	36,627	4,016	-	102
1961		461	3	578	889	38,489	3,957	35,463	96
1962		484	3	597	919	40,948	3,909	35,377	100
1963		511	3	617	961	43,169	3,852	34,323	116
1964		544	4	641	996	45,357	3,835	33,825	117
1965		620	4	735	1,024	48,075	3,826	31,653	123
1966		640	4	755	1,072	50,806	3,818	30,940	125
1967		671	5	817	1,110	53,957	3,764	29,926	107
1968		700	9	851	1,155	56,681	3,748	29,451	94
1969		734	26	892	1,242	60,486	3,743	28,998	89
1970		756	58	937	1,308	64,230	3,699	28,482	71
1971		782	129	986	1,470	70,077	3,682	27,732	61
1972		805	221	1,094	1,769	79,092	3,659	27,638	23
1973		829	304	1,155	2,120	88,754	3,696	27,392	25
1974		848	359	1,230	2,407	98,329	3,682	27,081	22
1975		859	378	1,258	2,590	105,005	3,668	26,805	22
1976		869	387	1,286	2,665	107,632	3,673	26,650	22
1977		878	398	1,321	2,742	110,618	3,669	26,463	17
1978		887	408	1,336	2,771	114,249	3,669	26,324	18
1979		895	419	1,366	2,840	117,657	3,666	26,281	12
1980		906	427	1,425	2,883	120,460	3,641	26,084	11
1981		914	435	1,462	2,930	123,204	3,645	25,995	11
1982		923	441	1,470	3,001	125,335	3,656	26,115	9
1983		927	445	1,476	3,063	126,959	3,653	26,002	8
1984		932	451	1,483	3,111	128,087	3,658	25,858	8
1985		933	454	1,496	3,132	128,914	3,641	25,798	7
1986		933	454	1,501	3,151	129,610	3,650	25,701	7
1987		931	455	1,514	3,152	130,463	3,648	25,667	7
1988		930	456	1,526	3,170	131,407	3,649	25,606	6
1989		931	458	1,535	3,160	132,437	3,649	25,620	6
1990		933	464	1,554	3,166	133,610	3,654	25,639	6
1991		935	468	1,589	3,175	135,157	3,648	25,559	2
1992		935	467	1,602	3,181	137,388	3,642	25,574	1
1993		932	466	1,618	3,200	141,403	3,642	25,575	1
1994		931	465	1,615	3,207	144,885	3,641	25,561	1
1995		931	467	1,631	3,207	147,016	3,637	25,506	-
1996		925	470	1,636	3,219	148,989	3,636	25,480	-
1997		923	471	1,654	3,224	150,626	3,641	25,455	-
1998		920	473	1,662	3,232	151,703	3,643	25,393	-
1999		911	473	1,670	3,239	152,464	3,641	25,351	-
2000		907	472	1,682	3,230	153,439	3,639	25,322	-
2001		904	475	1,687	3,225	153,952	3,636	25,268	-
2002		900	475	1,690	3,226	154,487	3,627	25,238	-
2003		894	472	1,696	3,207	155,016	3,598	25,064	-
2004		886	459	1,699	3,207	155,524	3,524	24,852	-
2005		848	385	1,704	3,225	156,082	2,963	24,384	-
2006		811	329	1,706	3,221	156,758	2,584	23,946	-
2007		807	320	1,705	3,230	157,396	2,474	23,605	-
2008		807	316	1,706	3,218	157,860	2,380	23,180	-
2009		803	312	1,710	3,197	158,327	2,336	22,997	-
2010		802	305	1,716	3,180	158,809	2,275	22,926	-
2011		798	303	1,711	3,186	159,354	2,263	22,839	-
2012		791	305	1,706	3,184	159,730	2,234	22,753	-
2013		770	304	1,700	3,162	160,392	2,224	22,578	-
2014		752	296	1,703	3,153	161,244	2,221	22,560	-
2015		750	295	1,709	3,145	162,124	2,208	22,549	-
2016		733	291	1,714	3,130	163,043	2,211	22,484	-
2017		732	290	1,718	3,111	163,814	2,209	22,458	-
2018		728	289	1,719	3,117	164,873	2,209	22,422	-
2019		726	289	1,719	3,113	165,438	2,198	22,388	-

(Note) Prepared based on “The Survey of the Current Status of Fire Prevention and Earthquake Countermeasures” and “The Report on Personnel Changes concerning Fire Defense Headquarters and Volunteer Fire Corps”.

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