# Extract of the 2016 White Paper on Fire Service

Materials created by the Fire and Disaster Management Agency were extracted and translated by the International Fire Service Information Center

Fire and Disaster Management Agency (FDMA)

# FY2016 Firefighting White Paper – Extract – Table of Contents

**Attachment**

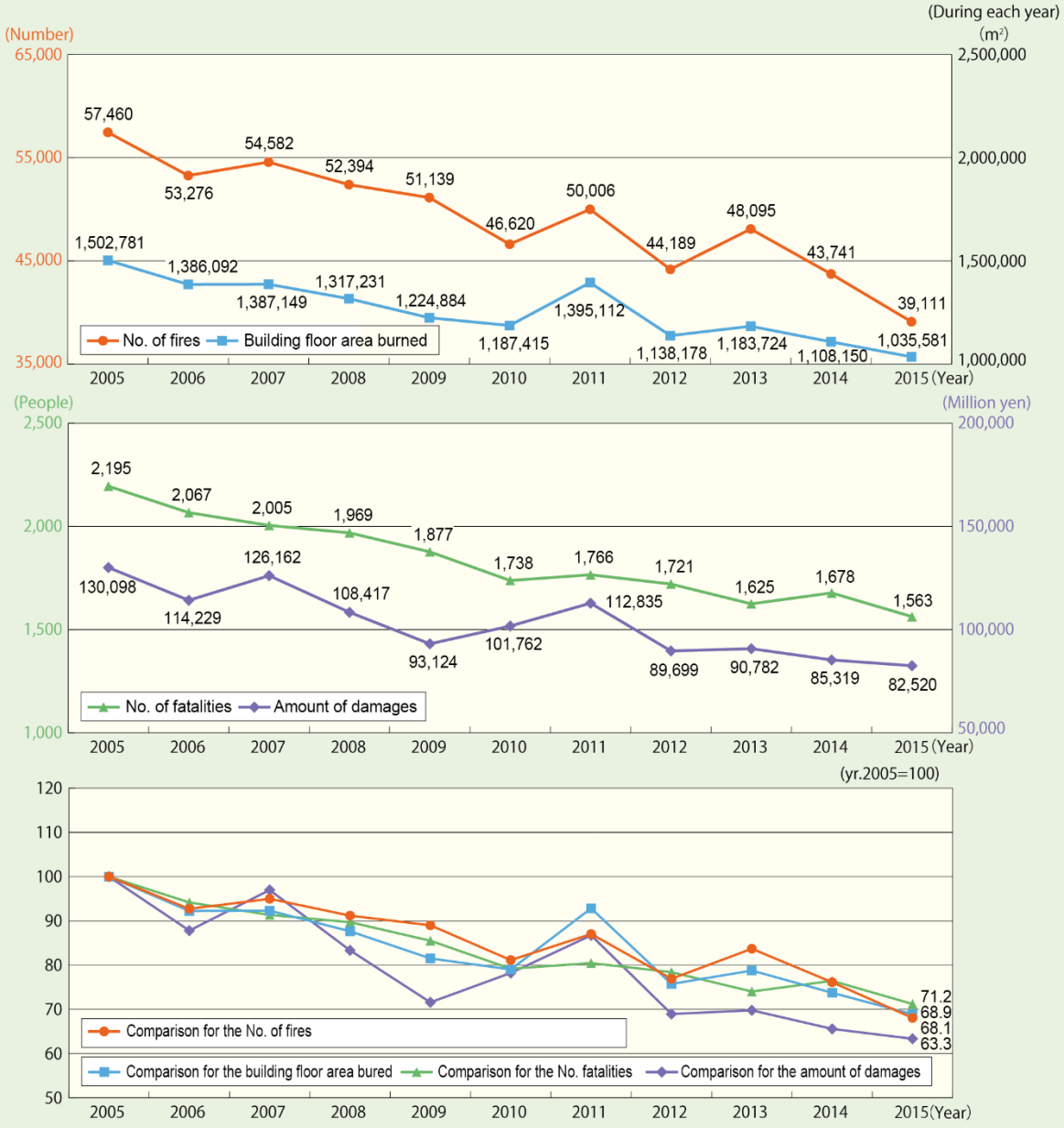
Section 1

# Fire Prevention

## Current Status and Recent Trends with Fires

Looking at the number of fires over the past ten years reveals that this number has largely been trending downwards since 2005, when the number was 57,460. The number of fires that occurred in 2015 came to 39,111, falling by 4,630 (10.6%) compared to the previous year, which is 68.1% of the number from ten years prior (the number of fires in 2005). Furthermore, the number of fatalities from fires has also largely been trending downward since 2005, when the number registered came to 2,195. The number of fatalities from fires in 2015 came to 1,563, a decrease of 115 (6.9%) compared with the previous year. This was 71.2% of the number from ten years prior (the number of fatalities in 2005) (Fig. 1-1-1, Table 1-1-1).

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




(Notes) 1 Prepared from Fire Reports
2 See the left axes for the "No. of fires," "No. of fatalities," "Comparison for the No. of fires," "Comparison for the building floor area burned, "Comparison for the No. of fatalities," and "Comparison for the amount of damages," and see the right axes for the "Building floor area burned" and "Amount of damages."
3 For the "Comparison of the No. of fires," "Comparison for the building floor area burned, "Comparison for the No. of fatalities," and "Comparison for the amount of damages" the figures from 2005 were taken as 100.

## Table 1-1-1 Status of fires

(During each year)

| Classification | Unit | 2005 | 2014 (A) | 2015 (B) | Change (B) − (A) (C) | Rate of change (C) / (A) ×100 (%) |
|---|---|---|---|---|---|---|
| No. of fires | Fires | 57,460 | 43,741 | 39,111 | −4,630 | −10.6 |
| Building fires | | 33,049 | 23,641 | 22,197 | −1,444 | −6.1 |
| Forest fires | | 2,215 | 1,494 | 1,106 | −388 | −26.0 |
| Vehicle fires | | 6,630 | 4,467 | 4,188 | −279 | −6.2 |
| Ship fires | | 124 | 86 | 97 | 11 | 12.8 |
| Aircraft fires | | 6 | 1 | 7 | 6 | 600.0 |
| Other fires | | 15,436 | 14,052 | 11,516 | −2,536 | −18.0 |
| No. of buildings burned | Buildings | 46,188 | 33,380 | 31,780 | −1,600 | −4.8 |
| Totally destroyed | | 10,602 | 7,411 | 7,131 | −280 | −3.8 |
| Half destroyed | | 3,335 | 2,021 | 1,834 | −187 | −9.3 |
| Partially destroyed | | 13,762 | 9,019 | 8,538 | −481 | −5.3 |
| Minor fire | | 18,489 | 14,929 | 14,277 | −652 | −4.4 |
| Building floor area burned | $m^2$ | 1,502,781 | 1,108,150 | 1,035,581 | −72,569 | −6.5 |
| Building surface area burned | $m^2$ | 155,299 | 118,684 | 112,797 | −5,887 | −5.0 |
| Forest area burned | a | 111,585 | 106,182 | 53,844 | −52,338 | −49.3 |
| Fatalities | People | 2,195 | 1,678 | 1,563 | −115 | −6.9 |
| Injured | People | 8,850 | 6,560 | 6,309 | −251 | −3.8 |
| No. of households affected | Households | 29,952 | 20,788 | 19,701 | −1,087 | −5.2 |
| Totally destroyed | | 6,834 | 4,569 | 4,416 | −153 | −3.3 |
| Half destroyed | | 2,550 | 1,425 | 1,439 | 14 | 1.0 |
| Partially destroyed | | 20,568 | 14,794 | 13,846 | −948 | −6.4 |
| No. of people affected | People | 76,633 | 47,726 | 44,443 | −3,283 | −6.9 |
| Amount of damages | Millions | 130,099 | 85,319 | 82,520 | −2,799 | −3.3 |
| Building fires | | 122,375 | 77,656 | 75,754 | −1,902 | −2.4 |
| Forest fires | | 868 | 1,369 | 255 | −1,114 | −81.4 |
| Vehicle fires | | 3,628 | 2,625 | 2,165 | −460 | −17.5 |
| Ship fires | | 364 | 241 | 579 | 338 | 140.2 |
| Aircraft fires | | 4 | 0 | 496 | 496 | — |
| Other fires | | 2,016 | 2,820 | 3,079 | 259 | 9.2 |
| Explosions | | 842 | 608 | 193 | −415 | −68.3 |
| Fire outbreak rate | Fires/10,000 | 4.5 | 3.4 | 3.1 | −0.3 | — |

(Notes)
1 Prepared from Fire Reports
2 The figures for each year are calculations of the fires that occurred between January - 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 “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.
5 “Forest fires” refer to fires that burn forests, wilderness, or grassland. 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, vehicle fires, Forest 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 2005 was found from the Basic Resident Register as of March 31, while the populations for 2014 and 2015 were found from a survey of the current status of fire prevention and earthquake countermeasures as of March 31 for each year.
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.

## Current Status of Fire Prevention Administration

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

The number of residential fires in 2015 (11,102, excluding those from arson) accounted for roughly 50% of the number of building fires (20,349, excluding those from arson). What is more, the number of fatalities from residential fires (914, excluding suicides by arson), accounts for roughly 80% of the number of fatalities from building fires (1,086, excluding suicides by arson), with this trend holding steady for more than ten years. In addition, elderly people age 65 or older account for approximately 70% of the fatalities from residential fires.

The revision of the Fire Services Act in 2004 mandated that residential fire alarms be installed in newly-built residences starting from June 2006. As for existing residences, it mandated that said alarms be installed in them within all municipalities nationwide based on the ordinances in each municipality by June 2011. The Fire and Disaster Management Agency (FDMA) held the Committee on Measures to Install Residential Fire larms. Based on the basic policy established at this committee, various initiatives were deployed to ensure that residential fire alarms were thoroughly installed and maintained. This was done by the fire defense headquarters throughout Japan in cooperation with volunteer fire corps, women's (female) firefighting clubs, voluntary disaster prevention organizations, and others. As of June 1, 2016, the nationwide installation rate was 81.2% and the ordinance compliance rate was 66.5%. When viewed by prefecture, Fukui Prefecture had the highest installation rate, and Ishikawa Prefecture had the highest ordinance compliance rate. (Table 1-1-26, Attachment 22)

**Table 1-1-26** **Installation rate of home fire alarms and rate of compliance with regulations by prefecture (June 1, 2016) (Since this is a sampling study, each of the figures contains a certain degree of measurement error.)**

| Prefecture | Installation rate | Regulation compliance rate | Prefecture | Installation rate | Regulation compliance rate |
|---|---|---|---|---|---|
| All of Japan | 81.2% | 66.5% | Mie | 78.3% (31) | 65.4% (22) |
| Hokkaido | 83.0% (16) | 71.8% ( 8) | Shiga | 83.1% (14) | 64.8% (26) |
| Aomori | 72.6% (42) | 51.2% (46) | Kyoto | 86.3% ( 6) | 70.9% (10) |
| Iwate | 84.0% (12) | 66.9% (21) | Osaka | 82.6% (17) | 75.9% ( 4) |
| Miyagi | 90.3% ( 2) | 65.0% (25) | Hyogo | 85.1% ( 8) | 67.1% (20) |
| Akita | 80.0% (26) | 65.4% (22) | Nara | 79.0% (30) | 75.0% ( 5) |
| Yamagata | 80.8% (22) | 64.6% (27) | Wakayama | 79.9% (27) | 68.1% (17) |
| Fukushima | 74.2% (40) | 56.3% (41) | Tottori | 84.9% (10) | 62.5% (33) |
| Ibaraki | 74.6% (38) | 61.7% (35) | Shimane | 81.7% (19) | 57.0% (40) |
| Tochigi | 70.8% (45) | 59.3% (38) | Okayama | 72.8% (41) | 54.2% (44) |
| Gunma | 67.1% (46) | 51.8% (45) | Hiroshima | 85.1% ( 8) | 73.1% ( 7) |
| Saitama | 77.1% (35) | 59.1% (39) | Yamaguchi | 83.9% (13) | 74.8% ( 6) |
| Chiba | 77.6% (34) | 65.1% (24) | Tokushima | 74.4% (39) | 62.2% (34) |
| Tokyo | 87.8% ( 5) | 71.0% ( 9) | Kagawa | 75.4% (37) | 62.9% (30) |
| Kanagawa | 82.2% (18) | 69.4% (15) | Ehime | 80.3% (24) | 70.8% (12) |
| Niigata | 83.1% (14) | 68.2% (16) | Kochi | 76.8% (36) | 62.6% (31) |
| Toyama | 84.1% (11) | 70.1% (14) | Fukuoka | 80.4% (23) | 67.3% (19) |
| Ishikawa | 87.9% ( 4) | 85.4% ( 1) | Saga | 72.0% (43) | 54.9% (43) |
| Fukui | 93.0% ( 1) | 81.7% ( 2) | Nagasaki | 78.3% (31) | 60.6% (37) |
| Yamanashi | 71.4% (44) | 61.4% (36) | Kumamoto | 81.2% (20) | 62.6% (31) |
| Nagano | 81.0% (21) | 63.1% (29) | Oita | 86.2% ( 7) | 70.9% (10) |
| Gifu | 80.1% (25) | 64.6% (27) | Miyazaki | 79.3% (29) | 70.8% (12) |
| Shizuoka | 78.3% (31) | 67.9% (18) | Kagoshima | 89.3% ( 3) | 77.2% ( 3) |
| Aichi | 79.5% (28) | 55.0% (42) | Okinawa | 57.6% (47) | 41.0% (47) |

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

## 2. Fire Prevention Properties

The Fire Services 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 defence equipment etc.*1 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 Services Act according to their purpose, size, and so forth.

As of March 31, 2016, the number of fire prevention properties throughout Japan came to 4,052,581 (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 Services Act that are listed in (1) through (16-3) and have a total area of 150m$^2$ 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 1,122,214, accounting for 27.7% of the total fire prevention properties throughout Japan. Those properties that are particularly concentrated in urban areas include underground malls (87.3% of the national total), semi-underground malls*2 (85.7% of the national total), stores engaged in sex-related businesses (48.2% of the national total), and so on (Table 1-1-27).

### Table 1-1-27 Number of fire prevention properties

(As of March 31, 2016)

| Classification of fire prevention properties | | | Nationwide | 21 major cities | Percentage (%) |
|---|---|---|---|---|---|
| (1) | a | Theaters, etc. | 4,471 | 662 | 14.8 |
| | b | Public halls, etc. | 66,342 | 6,281 | 9.5 |
| (2) | a | Cabarets, etc. | 934 | 118 | 12.6 |
| | b | Game centers, etc. | 10,784 | 2,039 | 18.9 |
| | c | Stores engaged in sex-related businesses, etc. | 245 | 118 | 48.2 |
| | d | Karaoke box and stores, etc. | 2,882 | 675 | 23.4 |
| (3) | a | Restaurants, etc. | 3,325 | 550 | 16.5 |
| | b | Eating and drinking houses | 84,610 | 16,663 | 19.7 |
| (4) | | Department stores, etc. | 159,470 | 27,658 | 17.3 |
| (5) | a | Hotels, etc. | 58,685 | 5,827 | 9.9 |
| | b | Apartment houses, etc. | 1,294,957 | 481,152 | 37.2 |
| (6) | a | Hospitals, etc. | 62,933 | 12,235 | 19.4 |
| | b | (1) Short-term welfare facilities for the elderly | 38,366 | 6,811 | 17.8 |
| | | (2) Shelters | 264 | 33 | 12.5 |
| | | (3) Nurseries | 160 | 29 | 18.1 |
| | | (4) Welfare facilities for disabled children | 566 | 81 | 14.3 |
| | | (5) Support facilities for the disabled | 5,216 | 864 | 16.6 |
| | | Subtotal | 44,572 | 7,818 | 17.5 |
| | c | (1) Elderly daycare centers, etc. | 25,321 | 4,298 | 17.0 |
| | | (2) Rehabilitation facilities | 1,105 | 65 | 5.9 |
| | | (3) Nursery schools, etc. | 29,875 | 5,846 | 19.6 |
| | | (4) Child development support centers, etc. | 1,883 | 266 | 14.1 |
| (6) | c | (5) Welfare centers for disabled persons, etc. | 16,095 | 2,448 | 15.2 |
| | | Subtotal | 74,279 | 12,923 | 17.4 |
| | d | Kindergartens, etc. | 18,115 | 4,159 | 23.0 |
| (7) | | Schools | 128,429 | 28,552 | 22.2 |
| (8) | | Libraries, etc. | 7,836 | 852 | 10.9 |
| (9) | a | Special bathhouses | 1,685 | 680 | 40.4 |
| | b | General bathhouses | 4,799 | 1,231 | 25.7 |
| (10) | | Railroad depots | 3,845 | 1,407 | 36.6 |
| (11) | | Temples and shrines, etc. | 56,920 | 11,826 | 20.8 |
| (12) | a | Factories, etc. | 492,981 | 69,565 | 14.1 |
| | b | Studios | 407 | 128 | 31.4 |
| (13) | a | Parking lots, etc. | 51,403 | 15,120 | 29.4 |
| | b | Aircraft hangars | 749 | 105 | 14.0 |
| (14) | | Warehouses | 325,086 | 52,239 | 16.1 |
| (15) | | Offices, etc. | 461,608 | 106,084 | 23.0 |
| (16) | a | Specified multipurpose fire prevention properties | 364,834 | 135,266 | 37.1 |
| | b | Unspecified multipurpose fire prevention properties | 255,350 | 118,122 | 46.3 |
| (16-2) | | Underground malls | 63 | 55 | 87.3 |
| (16-3) | | Semi-underground malls | 7 | 6 | 85.7 |
| (17) | | Cultural properties | 8,639 | 1,591 | 18.4 |
| (18) | | Arcades | 1,336 | 507 | 37.9 |
| (19) | | Mountain forests | 0 | 0 | – |
| Total | | | 4,052,581 | 1,122,214 | 27.7 |

(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 Services Act that are listed in (1) through (16-3) and have a total area of 150m$^2$ 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, Sagamihara 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).

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

*2 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.

## 3. Fire Prevention Management System

### (1) Fire Protection Managers

The Fire Services 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[*3] that form the core of voluntary fire protection management structures, as well as preparing firefighting plans for fire protection management[*4] that include stipulations on firefighting, reporting, and holding disaster drills.

As of March 31, 2016, the number of fire prevention properties that were legally required to establish fire protection management structures and appoint fire protection managers came to 1,075,458 nationwide. Of these, 862,798 properties, which corresponds to 80.2%, have appointed fire protection managers and have notified firefighting agencies to this effect. However, 212,660 fire prevention properties have yet to appoint a fire protection manager. Firefighting agencies are providing the management officials at these fire prevention properties with guidance and instructions in an effort to rectify this.

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 794,991, for 73.9% of the total (Table 1-1-28).

### (2) Supervisors of Fire Protection Management

For properties like high-rise buildings (buildings that are taller than 31 m high), underground malls, semi-underground malls, and other specified properties under fire prevention at or above a certain size[*5] where management authority has been divided up, the Fire Services 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 (Supervisory Fire protection management System: enacted April 1, 2014).

This was preceded by the former joint fire protection management consultation system (whereby fire protection management was carried out jointly by establishing joint fire protection management consultative committees with the major management officials at the fire prevention properties serving as representatives, and where they established items related to preparing firefighting plans for fire protection management and other necessary operations through consultations). With this system the roles and authorities of the supervisors of fire protection management were not clearly defined in law, which made it impossible to establish a system whereby fire protection management could be carried out autonomously and in an integrated manner. Therefore, the Act for Partial Revision of the Fire Services Act (2012; Law No. 38) mandated that supervisors of fire protection management be appointed and that they be granted the authority to issue instructions to the fire protection managers.

As of March 31, 2016, the number of fire prevention properties that were required to appoint supervisors of fire protection management came to 84,837 nationwide. Of these, 42,905, which corresponds to 50.6%, 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 40,133. This represents a notification rate of 47.3% (Table 1-1-29).

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*3 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.

*4 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.

*5 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.

## Table 1-1-28 Nationwide fire prevention implementation status

(As of March 31, 2016)

| Classification of properties under fire prevention measures / Item | | | No. of properties that must perform fire protection management | No of fire prevention properties that have appointed fire protection managers | Appointment rate (%) | No. of fire prevention properties that have prepared firefighting plans for fire protection management | Preparation rate (%) |
|---|---|---|---|---|---|---|---|
| (1) | a | Theaters, etc. | 3,252 | 2,954 | 90.8 | 2,861 | 88.0 |
| | b | Public halls, etc. | 61,168 | 49,129 | 80.3 | 45,638 | 74.6 |
| (2) | a | Cabarets, etc. | 751 | 436 | 58.1 | 375 | 49.9 |
| | b | Game centers, etc. | 9,532 | 8,812 | 92.4 | 8,449 | 88.6 |
| | c | Stores engaged in sex-related businesses, etc. | 182 | 121 | 66.5 | 118 | 64.8 |
| | d | Karaoke box and stores, etc. | 2,650 | 2,425 | 91.5 | 2,293 | 86.5 |
| (3) | a | Restaurants, etc. | 2,650 | 2,305 | 87.0 | 2,090 | 78.9 |
| | b | Eating and drinking houses | 75,069 | 59,362 | 79.1 | 54,489 | 72.6 |
| (4) | | Department stores, etc. | 104,030 | 83,041 | 79.8 | 77,557 | 74.6 |
| (5) | a | Hotels, etc. | 36,213 | 33,863 | 93.5 | 32,662 | 90.2 |
| | b | Apartment houses, etc. | 179,713 | 136,365 | 75.9 | 122,228 | 68.0 |
| (6) | a | Hospitals, etc. | 22,939 | 20,761 | 90.5 | 19,873 | 86.6 |
| | b | Special elderly nursing homes, etc. | 35,234 | 33,258 | 94.4 | 32,278 | 91.6 |
| | c | Elderly daycare centers, etc. | 44,522 | 42,012 | 94.4 | 40,741 | 91.5 |
| | d | Kindergartens, etc. | 11,288 | 10,887 | 96.4 | 10,444 | 92.5 |
| (7) | | Schools | 44,292 | 42,174 | 95.2 | 40,579 | 91.6 |
| (8) | | Libraries, etc. | 5,240 | 4,815 | 91.9 | 4,580 | 87.4 |
| (9) | a | Special bathhouses | 1,327 | 1,192 | 89.8 | 1,156 | 87.1 |
| | b | General bathhouses | 2,936 | 2,693 | 91.7 | 2,497 | 85.0 |
| (10) | | Railroad depots, etc. | 674 | 524 | 77.7 | 469 | 69.6 |
| (11) | | Temples and shrines, etc. | 24,581 | 19,773 | 80.4 | 17,678 | 71.9 |
| (12) | a | Factories, etc. | 39,775 | 34,428 | 86.6 | 31,419 | 79.0 |
| | b | Studios | 273 | 175 | 64.1 | 154 | 56.4 |
| (13) | a | Parking lots, etc. | 1,420 | 1,125 | 79.2 | 969 | 68.2 |
| | b | Aircraft hangars | 125 | 116 | 92.8 | 111 | 88.8 |
| (14) | | Warehouses | 10,054 | 7,844 | 78.0 | 7,052 | 70.1 |
| (15) | | Offices, etc. | 98,273 | 80,444 | 81.9 | 74,001 | 75.3 |
| (16) | a | Specified multipurpose fire prevention properties | 213,187 | 150,846 (28,887) | 70.8 (13.6 ) | 134,527 (23,764) | 63.1 (11.1) |
| | b | Unspecified multipurpose fire prevention properties | 42,635 | 29,576 (5,237) | 69.4 (12.3) | 26,437 (4,268) | 62.0 (10.0) |
| (16-2) | | Underground malls | 63 | 60 | 95.2 | 60 | 95.2 |
| (17) | | Cultural properties | 1,410 | 1,282 | 90.9 | 1,206 | 85.5 |
| Total | | | 1,075,458 | 862,798 | 80.2 | 794,991 | 73.9 |

(Notes) 1 Prepared based on the Survey on the Actual Conditions of Fire Prevention Properties.
2 When a property under fire prevention measures has multiple management officials, they are only all counted when all of them are involved in the appointment of the fire protection manager or preparing firefighting plans for fire protection management. The numbers in parenthesis are the figures for fire prevention properties where said managers are appointed and plans are prepared only by some of them.
3 The classification of fire prevention properties is the classification pursuant to Appended Table I of the Ordinance of Enforcement for the Fire Services Act. The facility names are illustrations of this. The same holds true in this section hereafter unless otherwise noted.

### (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 Services 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 engineers[*6] with three or more years of practical experience with construction work for fire defence equipment etc., or people with three or more years of practical experience as fire protection managers. They must also complete a training course

*6 Fire protection engineer: A person with expert knowledge of fire defence equipment etc. who has been issued a fire protection engineer certification

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.

What is more, these inspectors are obligated to undergo re-training every five years for new knowledge and skills that they must learn.

As of March 31, 2016, the number of such inspectors came to 29,085.

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 criteria. This criteria 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.”

## Table 1-1-29 Nationwide supervisory fire protection management implementation status

(As of March 31, 2016)

| Classification of properties under fire prevention measures / Item | | | No. of properties that must perform supervisory fire protection management | No of fire prevention properties that have been appointed supervisors of fire protection management | Appointment rate (%) | No. of fire prevention properties that have prepared overall fire prevention plans | Preparation rate (%) |
|---|---|---|---|---|---|---|---|
| (1) | a | Theaters, etc. | 25 | 16 | 64.0 | 15 | 60.0 |
| | b | Public halls, etc. | 66 | 29 | 43.9 | 22 | 33.3 |
| (2) | a | Cabarets, etc. | 74 | 14 | 18.9 | 14 | 18.9 |
| | b | Game centers, etc. | 79 | 46 | 58.2 | 42 | 53.2 |
| | c | Stores engaged in sex-related businesses, etc. | 34 | 18 | 52.9 | 18 | 52.9 |
| | d | Karaoke box and stores, etc. | 21 | 9 | 42.9 | 8 | 38.1 |
| (3) | a. | Restaurants, etc. | 3 | 0 | 0.0 | 0 | 0.0 |
| | b | Eating and drinking houses | 2,140 | 1,056 | 49.3 | 978 | 45.7 |
| (4) | | Department stores, etc. | 736 | 355 | 48.2 | 321 | 43.6 |
| (5) | a | Hotels, etc. | 238 | 124 | 52.1 | 107 | 45.0 |
| (6) | a | Hospitals, etc. | 161 | 78 | 48.4 | 69 | 42.9 |
| | b | Special elderly nursing homes, etc. | 120 | 55 | 45.8 | 54 | 45.0 |
| | c. | Elderly daycare centers, etc. | 158 | 69 | 43.7 | 66 | 41.8 |
| | d. | Kindergartens, etc. | 13 | 8 | 61.5 | 5 | 38.5 |
| (9) | a. | Special bathhouses | 119 | 55 | 46.2 | 45 | 37.8 |
| (16) | a | Specified multipurpose fire prevention properties | 55,160 | 27,385 | 49.6 | 25,507 | 46.2 |
| | b | Unspecified multipurpose fire prevention properties | 7,071 | 2,931 | 41.5 | 2,681 | 37.9 |
| (16-2) | | Underground malls | 54 | 44 | 81.5 | 42 | 77.8 |
| (16-3) | | Semi-underground malls | 4 | 4 | 100.0 | 3 | 75.0 |
| High-rise buildings | | | 18,561 | 10,609 | 57.2 | 10,136 | 54.6 |
| Total | | | 84,837 | 42,905 | 50.6 | 40,133 | 47.3 |

(Notes) 1 Prepared based on the Survey on the Actual Conditions of Fire Prevention Properties.
2 High-rise buildings (buildings that are taller than 31 meters) are not classified within Appended Table I of the Ordinance of Enforcement for the Fire Services 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.

## 4. Disaster Prevention Management System

### (1) Disaster Protection Managers

In order to handle imminent threats such as major earthquakes, the revisions to the Fire Services Act from June 2007 mandated 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 establish fire defense organizations for self protection.[*7] Such organizations prepare firefighting plans for disaster protection management[*8] suited to earthquake and other disasters, and appoint disaster protection managers[*9] responsible for emergency response structures concerning significant damage when earthquakes strike and for holding evacuation drills. In addition, they carry out the necessary operations in order to mitigate the damage from fires and other disasters.

**Table 1-1-30 Implementation status for disaster prevention management throughout Japan**

(As of March 31, 2016)

| Usage category / Item | | | No. of properties that require disaster prevention management | No. of properties for which disaster prevention managers have been appointed | Appointment rate (%) | No. of properties that have drafted firefighting plans for disaster prevention management | Preparation rate (%) | No. of fire prevention properties at which voluntary fire prevention organizations have been established | Notification rate (%) |
|---|---|---|---|---|---|---|---|---|---|
| (1) | a | Theaters, etc. | 66 | 62 | 93.9 | 60 | 90.9 | 58 | 87.9 |
| | b | Public halls, etc. | 5 | 5 | 100.0 | 5 | 100.0 | 5 | 100.0 |
| (2) | a | Cabarets, etc. | 0 | 0 | — | 0 | — | 0 | — |
| | b | Game centers, etc. | 18 | 16 | 88.9 | 16 | 88.9 | 12 | 66.7 |
| | c | Stores engaged in sex-related businesses, etc. | 0 | 0 | — | 0 | — | 0 | — |
| | d | Karaoke box and stores, etc. | 0 | 0 | — | 0 | — | 0 | — |
| (3) | a | Restaurants, etc. | 0 | 0 | — | 0 | — | 0 | — |
| | b | Eating and drinking houses | 0 | 0 | — | 0 | — | 0 | — |
| (4) | | Department stores, etc. | 363 | 329 | 90.6 | 310 | 85.4 | 317 | 87.3 |
| (5) | a | Hotels, etc. | 391 | 376 | 96.2 | 363 | 92.8 | 347 | 88.7 |
| | b | Apartment houses, etc. | | | | | | | |
| (6) | a | Hospitals, etc. | 723 | 662 | 91.6 | 619 | 85.6 | 601 | 83.1 |
| | b | Special elderly nursing homes, etc. | 38 | 36 | 94.7 | 33 | 86.8 | 33 | 86.8 |
| | c | Elderly daycare centers, etc. | 18 | 14 | 77.8 | 14 | 77.8 | 17 | 94.4 |
| | d | Kindergartens, etc. | 0 | 0 | — | 0 | — | 0 | — |
| (7) | | Schools | 822 | 739 | 89.9 | 644 | 78.3 | 648 | 78.8 |
| (8) | | Libraries, etc. | 13 | 9 | 69.2 | 9 | 69.2 | 11 | 84.6 |
| (9) | a | Special bathhouses | 0 | 0 | — | 0 | — | 0 | — |
| | b | General bathhouses | 0 | 0 | — | 0 | — | 0 | — |
| (10) | | Railroad depots, etc. | 6 | 4 | 66.7 | 4 | 66.7 | 5 | 83.3 |
| (11) | | Temples and shrines, etc. | 17 | 14 | 82.4 | 13 | 76.5 | 13 | 76.5 |
| (12) | a | Factories, etc. | 1,483 | 1,359 | 91.6 | 1,230 | 82.9 | 1,180 | 79.6 |
| | b | Studios | 3 | 3 | 100.0 | 3 | 100.0 | 3 | 100.0 |
| (13) | a | Parking lots, etc. | 6 | 3 | 50.0 | 3 | 50.0 | 6 | 100.0 |
| | b | Aircraft hangars | | | | | | | |
| (14) | | Warehouses | | | | | | | |
| (15) | | Offices, etc. | 1,599 | 1,317 | 82.4 | 1,220 | 76.3 | 1,414 | 88.4 |
| (16) | a | Specified multipurpose fire prevention properties | 3,313 | 2,271 (964) | 68.5 (29.1) | 2,146 (948) | 64.8 (28.6) | 2,998 (67) | 90.5 (2.0) |
| | b | Unspecified multipurpose fire prevention properties | 738 | 601 (108) | 81.4 (14.6) | 544 (105) | 73.7 (14.2) | 621 (12) | 84.1 (1.6) |
| (16-2) | | Underground malls | 56 | 32 | 57.1 | 32 | 57.1 | 52 | 92.9 |
| (17) | | Cultural properties | 0 | 0 | — | 0 | — | 0 | — |
| Total | | | 9,678 | 7,852 | 81.1 | 7,268 | 75.1 | 8,341 | 86.2 |

(Notes) 1 Prepared based on the Survey on the Actual Conditions of Fire Prevention Properties.
2 "Properties" here refer to "properties and other manufactured items."
3 When a property that requires disaster prevention management or a property required to establish a voluntary fire prevention organization has multiple management officials, they are only all counted when all of them are involved in the appointment of the disaster prevention manager, preparing firefighting plans for disaster prevention management and establishment of voluntary fire prevention organizations. The numbers in parenthesis are the figures for properties where said managers are appointed, plans are prepared and organizations have been established, only by some of them.

*7 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.
*8 Firefighting plans for disaster protection management: These are plans that establish matters which are necessary for disaster protection management. Said plans are prepared by disaster protection managers, with disaster protection management operations carried out on the basis of said plans.
*9 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.

As of March 31, 2016, 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 9,678 throughout Japan. Of these, 7,852, which corresponds to 81.1%, 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 7,268, or 75.1% of the total. The number of said properties that have established fire defense organizations for self-protection came to 8,341, or 86.2% of the total (Table 1-1-30).

## (2) Supervisors of Disaster Protection Management

For those buildings that require disaster protection management where management authority has been divided up, the Fire Services 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 (supervisory disaster protection management system: enacted April 1, 2014).

As of March 31, 2016, the number of fire prevention properties that were required to appoint supervisors of disaster protection management came to 2,950 nationwide. Of these, 2,469, which corresponds to 83.7%, 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 2,388. This represents a notification rate of 80.9% (Table 1-1-31).

**Table 1-1-31 Nationwide supervisory fire protection management implementation status**

(As of March 31, 2016)

| Classification of properties under fire prevention measures / Item | | | No. of properties that must perform supervisory fire p rotection management | No. of properties for which supervisors of fire protection managers have been appointed | Appointment rate (%) | No. of properties that have prepared overall fire prevention plans | Preparation rate (%) |
|---|---|---|---|---|---|---|---|
| (1) | a | Theaters, etc. | 3 | 2 | 66.7 | 2 | 66.7 |
| | b | Public halls, etc. | 0 | 0 | — | 0 | — |
| (2) | a | Cabarets, etc. | 0 | 0 | — | 0 | — |
| | b | Game centers, etc. | 0 | 0 | — | 0 | — |
| | c | Stores engaged in sex-related businesses, etc. | 0 | 0 | — | 0 | — |
| | d | Karaoke box and stores, etc. | 0 | 0 | — | 0 | — |
| (3) | a | Restaurants, etc. | 0 | 0 | — | 0 | — |
| | b | Eating and drinking houses | 0 | 0 | — | 0 | — |
| (4) | | Department stores, etc. | 57 | 37 | 64.9 | 38 | 66.7 |
| (5) | a | Hotels, etc. | 12 | 8 | 66.7 | 8 | 66.7 |
| (6) | b | Hospitals, etc. | 41 | 18 | 43.9 | 18 | 43.9 |
| | b | Special elderly nursing homes, etc. | 3 | 3 | 100.0 | 3 | 100.0 |
| | c | Elderly daycare centers, etc. | 0 | 0 | — | 0 | — |
| | d | Kindergartens, etc. | 0 | 0 | — | 0 | — |
| (7) | | Schools | 75 | 12 | 16.0 | 9 | 12.0 |
| (8) | | Libraries, etc. | 2 | 0 | 0 | 0 | 0 |
| (9) | a | Special bathhouses | 0 | 0 | — | 0 | — |
| | b | General bathhouses | 0 | 0 | — | 0 | — |
| (10) | | Railroad depots, etc. | 5 | 4 | 80.0 | 4 | 80.0 |
| (11) | | Temples and shrines, etc. | 2 | 1 | 50.0 | 0 | 0 |
| (12) | a | Factories, etc. | 40 | 12 | 30.0 | 11 | 27.5 |
| | b | Studios | 0 | 0 | — | 0 | — |
| (13) | a | Parking lots, etc. | 4 | 4 | 100.0 | 4 | 100.0 |
| (15) | | Offices, etc. | 529 | 430 | 81.3 | 411 | 77.7 |
| (16) | a | Specified multipurpose fire prevention properties | 1,947 | 1,764 | 90.6 | 1,711 | 87.9 |
| | b | Unspecified multipurpose fire prevention properties | 186 | 133 | 71.5 | 130 | 69.9 |
| (16-2) | | Underground malls | 44 | 41 | 93.2 | 39 | 88.6 |
| (17) | | Cultural properties | 0 | 0 | — | 0 | — |
| Total | | | 2,950 | 2,469 | 83.7 | 2,388 | 80.9 |

(Notes) 1. Prepared based on the Survey on the Actual Conditions of Fire Prevention Properties.
2. “Properties” here refer to “properties and other manufactured items.”

## 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 Services 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 FY2015 came to 859,216 (Table 1-1-32).

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 defence 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 defence equipment etc. or special fire defence equipment etc., pursuant to the regulations in Article 8, Article 8-2, or Article 17-4 of the Fire Services 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 Services 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 work to redress these violations to bring them back into legal compliance, such as by issuing warnings or other remedial instructions, orders, and so on (Table 1-1-33, Attachment 24, 25, 26 of the White Paper on Fire Service).

Particularly for specified violating properties (this refers to specified fire prevention properties with a floor area of 1,500 $m^2$ or more or unspecified fire prevention properties with 11 or more floors, excluding the basement, where sprinkler systems, indoor fire hydrants, or automatic fire alarms 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, 2016, there were 359 specified violating properties, and so therefore it is necessary to continue working to thoroughly correct these violations in a focused manner (Table 1-1-34).

### (2) Initiation of the New Fire Safety Certification Mark System

This new labeling system, which fire defense headquarters throughout Japan were notified of in October 2013, 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 marks out on display starting from August 1. Visitors to the FDMA's homepage can check to confirm hotels that have been issued the Fire Safety Certification Mark throughout Japan (reference URL: http://www.fdma.go.jp/kasai_yobo/hyoujiseido/index.html).

### (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 homepages of municipal governments based on the ordinances of said municipalities. This is aimed at fire prevention properties that have unspecified large numbers of people coming and going that have not yet installed sprinkler systems, indoor fire hydrants, or automatic fire alarms, despite being obligated to do so. This announcement system was initiated in all ordinance-designated cities starting from April 2015.

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 (see URL: http://www.fdma.go.jp/publication/index.html).

## Table 1-1-32 Implementation status for onsite inspections

(FY2015)

| Classification of properties under fire prevention measures | (1) a Theaters, etc. | (1) b Public halls, etc. | (2) a Cabarets, etc. | (2) b Game centers, etc. | (2) c Stores engaged in sex-related businesses, etc. | (2) d Karaoke box and stores, etc. | (3) a Restaurants, etc. | (3) b Eating and drinking houses | (4) Department stores, etc. |
|---|---|---|---|---|---|---|---|---|---|
| No. of onsite inspections performed | 2,248 | 19,707 | 317 | 4,505 | 108 | 1,259 | 1,057 | 30,883 | 54,232 |

| Classification of properties under fire prevention measures | (5) a Hotels, etc. | (5) b Apartment houses, etc. | (6) a Hospitals, etc. | (6) b Special elderly nursing homes, etc. | (6) c Elderly daycare centers, etc. | (6) d Kindergartens, etc. | (7) Schools | (8) Libraries, etc. | (9) a Special bathhouses |
|---|---|---|---|---|---|---|---|---|---|
| No. of onsite inspections performed | 33,988 | 153,132 | 21,726 | 25,757 | 33,154 | 6,617 | 35,184 | 2,453 | 754 |

| Classification of properties under fire prevention measures | (9) b General bathhouses | (10) Railroad depots, etc. | (11) Temples and shrines, etc. | (12) a Factories, etc. | (12) b Studios | (13) a Parking lots, etc. | (13) b Aircraft hangars | (14) Warehouses | (15) Offices, etc. |
|---|---|---|---|---|---|---|---|---|---|
| No. of onsite inspections performed | 1,332 | 1,169 | 13,733 | 86,384 | 110 | 12,612 | 1,386 | 59,312 | 91,528 |

| Classification of properties under fire prevention measures | (16) a Specified multipurpose fire prevention properties | (16) b Unspecified multipurpose fire prevention properties | (16-2) Underground malls | (16-3) Semi-underground malls | (17) Cultural properties | (18) Arcades | (19) Mountain forests | (20) Boats/vehicles | Total |
|---|---|---|---|---|---|---|---|---|---|
| No. of onsite inspections performed | 113,172 | 45,309 | 165 | 63 | 5,385 | 302 | 0 | 173 | 859,216 |

(Note) Prepared based on the Survey on the Actual Conditions of Fire Prevention Properties.

## Table 1-1-33 Status of orders

(FY2015)

| Types of orders \ Number | No. of orders | No. of revisions |
|---|---|---|
| Orders related to fire prevention properties (Article 5, Article 5-2, and Article 5-3 of the Fire Service Act) | 207 | 206 |
| Orders related to fire prevention management (Article 8 and Article 8-2 of the Fire Service Act) | 29 | 29 |
| Orders for measures related to firefighting equipment, etc. (Article 17-4 of the Fire Service Act) | 100 | 76 |
| Total | 336 | 311 |

(Notes) 1 Prepared based on the Survey on the Actual Conditions of Fire Prevention Properties.
2 "No. of revisions" refers to the number of orders that were revised as of March 31, 2016 based on the orders issued between April 1, 2015 and March 31, 2016 (including those for which plans had been submitted or which revision measures were underway as of March 31, 2016).

## Table 1-1-34 Trends in the improvement status of specified violating properties

(FY2015)

| 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/a ×100) |
|---|---|---|---|
| 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 | — | — |

(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).

## 6. Fire Defence Equipment etc.

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

Fire prevention approval 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 approval work throughout Japan in FY2015 came to 235,750, with only 30 of these failing to receive approval (Table 1-1-35).

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

The Fire Services Act states that the relevant personnel from fire prevention properties must install and properly maintain the necessary fire defence equipment etc. according to the purpose, size, structure, and capacity of the property in question.

A look at the installation status for primary fire defence equipment etc. in specified fire prevention properties throughout Japan reveals that, as of March 31, 2016, the installation rate for sprinkler systems (number installed/number that needs to be installed) was 99.6%, while that for automatic fire alarms was 98.3% (Table 1-1-36).

With respect to the technical standards pertaining to fire defence equipment etc., regulations are being successively set in place in accordance with technological progress and societal demands. Recently, a fire occurred at a group home for elderly people with dementia in Nagasaki City, Nagasaki Prefecture in February 2013 (that left five people dead and seven injured). In light of this, it was mandated that social welfare facilities that mainly house people who would have difficulty evacuating on their own must install sprinkler systems as a general rule, regardless of their floor area. The installation of these sprinkler systems has been carried out since April 1, 2015 as a result of the Partial Revision of the Order for Enforcement of the Fire Service Act (promulgated on December 27, 2013) and other legislation. To carry this out, transitional measures were established, which state that these are to be installed on existing facilities by March 31, 2018.

Moreover, a fire occurred at a medical clinic with beds in Fukuoka City, Fukuoka Prefecture in October 2013 (which left ten people dead and five injured). In light of this, it was mandated that medical clinics with beds and hospitals with patients that require assistance in order to evacuate must also install sprinkler systems as a general rule, regardless of their floor area. The installation of these sprinkler systems has been carried out since April 1, 2016 as a result of the Partial Revision of the Order for Enforcement of the Fire Service Act (promulgated on October 16, 2014) and other legislation. To carry this out, transitional measures were established which state that these are to be installed on existing facilities by June 30, 2025.

For properties in violation of fire prevention laws and ordinances, such as those in violation of the obligation to install fire defence equipment etc., orders for them to take measures pursuant to the Fire Services Act are proactively issued and the prompt and effective remediation of the violation is further promoted.

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

Efforts are made to ensure the performance of fire defence 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 defence equipment etc. can only be performed by fire protection engineers.

What is more, fire defence 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 defence equipment etc.. Therefore, the relevant personnel from the fire prevention properties must have fire protection engineers or fire protection 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 inspector certificate) perform the inspections on the fire defence equipment etc..

Efforts are made to improve the quality of these fire protection engineers and fire protection 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 defence 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, 2016, the total number of fire protection engineers came to 1,117,347 (Table 1-1-37). In addition, the number of special fire protection inspectors came to 672 special inspectors (for special fire defence equipment etc.), 149,422 Class 1 inspectors (for mechanical systems) and 140,994 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 defence 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.

## Table 1-1-35 Fire prevention approval processing status

(Cases)

| Breakdown / Gist of application | Approved | | Unapproved | | Total | |
|---|---|---|---|---|---|---|
| | FY2014 | FY2015 | FY2014 | FY2015 | FY2014 | FY2015 |
| New construction | 215,359 | 207,240 | 29 | 26 | 215,388 | 207,266 |
| Enlargement | 20,858 | 20,170 | 5 | 2 | 20,863 | 20,172 |
| Reconstruction | 928 | 843 | 1 | 1 | 929 | 844 |
| Relocation | 143 | 146 | 0 | 0 | 143 | 146 |
| Repair | 115 | 134 | 0 | 0 | 115 | 134 |
| Remodeling | 126 | 100 | 0 | 0 | 126 | 100 |
| Change of purpose | 3,807 | 3,926 | 2 | 1 | 3,809 | 3,927 |
| Other | 3,308 | 3,161 | 0 | 0 | 3,308 | 3,161 |
| Total | 244,644 | 235,720 | 37 | 30 | 244,681 | 235,750 |

(Notes) Prepared based on the Survey on the Actual Conditions of Fire Prevention Properties

## Table 1-1-36 Installation status for sprinkler systems and automatic fire alarms in specified fire prevention properties throughout Japan

(As of March 31, 2016)

| Classification of properties under fire prevention measures / Equipment type / Equipment condition | | | Sprinkler systems | | | | Automatic fire alarms | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | No. that needs to be installed | No. installed | No. of violations | Installation rate (%) | No. that needs to be installed | No. installed | No. of violations | Installation rate (%) |
| (1) | a | Theaters, etc. | 764 | 761 | 3 | 99.6 | 3,724 | 3,710 | 14 | 99.6 |
| | b | Public halls, etc. | 556 | 549 | 7 | 98.7 | 31,328 | 31,235 | 93 | 99.7 |
| (2) | a | Cabarets, etc. | 7 | 7 | 0 | 100.0 | 479 | 464 | 15 | 96.9 |
| | b | Game centers, etc. | 718 | 708 | 10 | 98.6 | 9,778 | 9,743 | 35 | 99.6 |
| | c | Stores engaged in sex-related businesses, etc. | 2 | 2 | 0 | 100.0 | 175 | 173 | 2 | 98.9 |
| | d | Karaoke box and stores, etc. | 9 | 9 | 0 | 100.0 | 2,776 | 2,704 | 72 | 97.4 |
| (3) | a | Restaurants, etc. | 1 | 1 | 0 | 100.0 | 2,254 | 2,183 | 71 | 96.9 |
| | b | Eating and drinking houses | 118 | 117 | 1 | 99.2 | 35,228 | 34,432 | 796 | 97.7 |
| (4) | | Department stores, etc. | 7,441 | 7,391 | 50 | 99.3 | 87,746 | 86,558 | 1,188 | 98.6 |
| (5) | a | Hotels, etc. | 1,972 | 1,964 | 8 | 99.6 | 46,290 | 45,821 | 469 | 99.0 |
| (6) | a | Hospitals, etc. | 7,346 | 7,332 | 14 | 99.8 | 39,764 | 39,624 | 140 | 99.6 |
| | b | (1) Short-term welfare facilities for the elderly | 33,542 | 33,435 | 107 | 99.7 | 38,290 | 38,186 | 104 | 99.7 |
| | | (2) Shelters | 241 | 241 | 0 | 100.0 | 260 | 260 | 0 | 100.0 |
| | | (3) Nurseries | 129 | 129 | 0 | 100.0 | 145 | 144 | 1 | 99.3 |
| | | (4) Welfare facilities for disabled children | 429 | 429 | 0 | 100.0 | 546 | 546 | 0 | 100.0 |
| | | (5) Support facilities for the disabled | 3,930 | 3,907 | 23 | 99.4 | 5,455 | 5,427 | 28 | 99.5 |
| | | Subtotal | 38,271 | 38,141 | 130 | 99.7 | 44,696 | 44,563 | 133 | 99.7 |
| | c | (1) Elderly daycare centers, etc. | 1,384 | 1,382 | 2 | 99.9 | 15,992 | 15,930 | 62 | 99.6 |
| | | (2) Rehabilitation facilities | 23 | 23 | 0 | 100.0 | 687 | 661 | 26 | 96.2 |
| | | (3) Nursery schools, etc. | 86 | 86 | 0 | 100.0 | 24,827 | 24,794 | 33 | 99.9 |
| | | (4) Child development support centers, etc. | 25 | 25 | 0 | 100.0 | 991 | 982 | 9 | 99.1 |
| | | (5) Welfare centers for disabled persons, etc. | 436 | 433 | 3 | 99.3 | 9,665 | 9,575 | 90 | 99.1 |
| | | Subtotal | 1,954 | 1,949 | 5 | 99.7 | 52,162 | 51,942 | 220 | 99.6 |
| | d | Kindergartens, etc. | 187 | 187 | 0 | 100.0 | 15,379 | 15,339 | 40 | 99.7 |
| (9) | a | Special bathhouses | 24 | 23 | 1 | 95.8 | 1,466 | 1,453 | 13 | 99.1 |
| (16) | a | Specified multipurpose fire prevention properties | 17,673 | 17,588 | 85 | 99.5 | 194,126 | 187,997 | 6,129 | 96.8 |
| (16-2) | | Underground malls | 59 | 59 | 0 | 100.0 | 60 | 60 | 0 | 100.0 |
| (16-3) | | Semi-underground malls | 4 | 4 | 0 | 100.0 | 5 | 5 | 0 | 100.0 |
| Total | | | 77,106 | 76,792 | 314 | 99.6 | 567,436 | 558,006 | 9,430 | 98.3 |

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

## Table 1-1-37 Number of fire protection engineers

(As of March 31, 2016)

| Classification | Special | Group 1 | Group 2 | Group 3 | Group 4 | Group 5 | Group 6 | Group 7 | Total |
|---|---|---|---|---|---|---|---|---|---|
| | Special firefighting equipment, etc. | Indoor fire hydrants / sprinklers, etc. | Foam fire extinguishers | $CO_2$ fire extinguishers, etc. | Automatic fire alarms, etc. | Metal evacuation ladders, etc. | Fire extinguishers | Electrical leakage fire alarms | |
| Class A (people) (Construction / maintenance) | 3,047 | 134,382 | 41,770 | 35,855 | 276,762 | 32,458 | -- | -- | 524,274 |
| Class B (people) (Maintenance) | -- | 36,952 | 11,484 | 10,484 | 87,724 | 17,493 | 243,612 | 185,324 | 593,073 |

(Notes) 1 Prepared based on the Statistical Table for the Testing and Certification of Hazardous Material Engineers and Fire Protection Engineers.
2 The number of engineers is the sum total of the number that have been certified.

### (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 Services 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, 2016, the number of flame retardancy and fire prevention properties came to 969,236. 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 87.5%, while it was 87.0% at those using carpets, and 84.7% at those using plywood display boards (Table 1-1-38).

#### 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 Services 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 homepage (reference URL: http://www.fdma.go.jp/html/life/yobou_contents/materials/).

## Table 1-1-38 Number of flame retardancy and fire prevention properties and usage status of flame retardant goods

(As of March 31, 2016)

| 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. | 4,142 | 2,555 | 2,429 | 95.1% | 1,901 | 1,807 | 95.1% | 468 | 445 | 95.1% |
| | b Public halls, etc. | 63,746 | 42,163 | 38,173 | 90.5% | 24,711 | 21,926 | 88.7% | 4,041 | 3,527 | 87.3% |
| (2) | a Cabarets, etc. | 933 | 464 | 350 | 75.4% | 475 | 384 | 80.8% | 50 | 46 | 92.0% |
| | b Game centers, etc. | 10,468 | 4,794 | 4,278 | 89.2% | 4,467 | 4,053 | 90.7% | 679 | 608 | 89.5% |
| | c Stores engaged in sex-related businesses, etc. | 197 | 134 | 109 | 81.3% | 113 | 92 | 81.4% | 8 | 6 | 75.0% |
| | d Karaoke box and stores, etc. | 2,675 | 1,370 | 1,223 | 89.3% | 1,177 | 1,083 | 92.0% | 174 | 164 | 94.3% |
| (3) | a Restaurants, etc. | 3,245 | 1,948 | 1,640 | 84.2% | 1,794 | 1,517 | 84.6% | 203 | 176 | 86.7% |
| | b Eating and drinking houses | 80,490 | 38,654 | 32,245 | 83.4% | 24,526 | 20,302 | 82.8% | 3,986 | 3,419 | 85.8% |
| (4) | Department stores, etc. | 152,786 | 59,873 | 54,001 | 90.2% | 32,920 | 29,061 | 88.3% | 7,725 | 6,642 | 86.0% |
| (5) | a Hotels, etc. | 56,968 | 45,955 | 41,826 | 91.0% | 38,319 | 35,142 | 91.7% | 2,707 | 2,243 | 82.9% |
| (6) | a Hospitals, etc. | 61,137 | 44,638 | 41,809 | 93.7% | 24,736 | 22,969 | 92.9% | 3,850 | 3,497 | 90.8% |
| | b Special elderly nursing homes, etc. | 43,112 | 35,572 | 33,573 | 94.4% | 21,114 | 19,845 | 94.0% | 3,609 | 3,309 | 91.7% |
| | c Elderly daycare centers, etc. | 71,445 | 52,780 | 48,887 | 92.6% | 30,609 | 27,797 | 90.8% | 4,912 | 4,371 | 89.0% |
| | d Kindergartens, etc. | 17,093 | 13,243 | 12,228 | 92.3% | 6,933 | 6,327 | 91.3% | 1,111 | 1,003 | 90.3% |
| (9) | a Special bathhouses | 1,532 | 1,128 | 997 | 88.4% | 1,083 | 990 | 91.4% | 78 | 63 | 80.8% |
| (12) | b Studios | 602 | 247 | 202 | 81.8% | 193 | 163 | 84.5% | 113 | 96 | 85.0% |
| (16) | a Specified multipurpose fire prevention properties | 327,295 | 142,483 | 114,279 | 80.2% | 96,686 | 78,042 | 80.7% | 17,651 | 13,965 | 79.1% |
| | b Unspecified multipurpose fire prevention properties | 20,271 | 3,163 | 2,492 | 78.8% | 2,294 | 1,786 | 77.9% | 1,004 | 806 | 80.3% |
| (16-2) | Underground malls | 60 | 49 | 38 | 77.6% | 40 | 32 | 80.0% | 7 | 7 | 100.0% |
| (16-3) | Semi-underground malls | 11 | 7 | 5 | 71.4% | 6 | 5 | 83.3% | 1 | 1 | 100.0% |
| | High-rise buildings | 51,028 | 21,680 | 18,175 | 83.8% | 19,653 | 16,961 | 86.3% | 3,869 | 3,247 | 83.9% |
| Total | | 969,236 | 512,900 | 448,959 | 87.5% | 333,750 | 290,284 | 87.0% | 56,246 | 47,641 | 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 31 meters) are not classified within Appended Table I of the Ordinance of Enforcement for the Fire Services 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.

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

From the perspective of fire prevention, the location, construction, management, and handling of equipment 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 (2002 Ministry of Internal Affairs and Communications Ministerial Ordinance No. 24; hereafter referred to as the "Ministerial Ordinance on Eligible Equipment and 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 Services Act.

The machinery and tools subject to inspection include the 12 items stipulated in Article 37 of the Order for Enforcement of the Fire Services 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 fools 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) (Table 1-1-39).

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 Services Act was promulgated on June 27, 2012. 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 Services Act (promulgated on March 27, 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, it also newly added residential fire alarms, which are required to be installed in all homes, to the machinery and tools subject to inspection (entered into force on April 1, 2014).

**Table 1-1-39 Inspection application status**

(FY2015)

| Type \ Classification | | No. of model test applications (applications) | No. of model alteration test applications (applications) | No. of model compliance inspection applications (items) | No. of passing model compliance inspections (items) |
|---|---|---|---|---|---|
| (1) Fire extinguishers | Large | 3 | 1 | 31,062 | 31,930 |
| | Small | 32 | 18 | 4,801,119 | 4,978,925 |
| (2) Fire extinguishing agent for fire extinguishers | For large ones | 2 | -- | 2,121 | 1,830 |
| | For small ones | | | 253,431 | 256,968 |
| (3) Fire-extinguishing foam | | 9 | -- | 1,810,650 | 1,787,130 |
| (4) Fire alarms | Detectors | 30 | 10 | 7,022,570 | 6,902,158 |
| | Sounders | 11 | 0 | 350,035 | 335,217 |
| (5) Code Transmitter | | 6 | 1 | 439,658 | 421,081 |
| (6) Control Panel | | 12 | 10 | 497,907 | 498,428 |
| (7) Residential fire alarms | | 8 | 12 | 5,243,194 | 5,131,951 |
| (8) Enclosed sprinkler heads | | 34 | 7 | 2,620,396 | 2,651,951 |
| (9) Water flow detectors | | 9 | 13 | 30,473 | 31,230 |
| (10) Deluge valve | | 9 | 2 | 16,782 | 17,079 |
| (11) Metal evacuation ladders | | 8 | 0 | 138,846 | 139,104 |
| (12) Escape slings | | 1 | 0 | 5,671 | 6,003 |
| Total | | 174 | 74 | 23,263,915 | 23,190,261 |

(Notes) 1 Prepared based on the Japan Fire Equipment Inspection Institute.
2 Model tests (model alteration tests): These are tests conducted by the Japan Fire Equipment Inspection Institute or registered inspection bodies on whether or not machinery and tools subject to inspection which are trying to receive model approval conform to the technical standards.

### (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 Services Act. The system also gives approval for labeling models that have been reported to the Minister of Internal Affairs and Communications in advance. The number of reports from manufacturers in FY2015 came to 25 for power fire pumps, 32 for fire hoses, 3 for fire suction hoses, 16 for couplers, 1 for disposable

aerosol fire extinguishers, and 2 for electric leak alarms.

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 Services Act.

Similar to machinery and tools subject to inspection, the Act for Partial Revision of the Fire Services Act (promulgated on June 27, 2012) 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 Services Act (promulgated on March 27, 2013) and other legislation, 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 (entered into force on April 1, 2014).

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

When it comes to the technical standards for fire defence 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 defence 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 defence equipment etc..

The performance demanded of fire defence 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 defence equipment etc.). Under this system, applications are made for each property under fire prevention measures regarding special fire defence 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, 2016, 60 cases have received certification thus far as special fire defence equipment etc. (Table 1-1-40).

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

## 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 (see White Paper P280). 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 1-1-41.

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 Services Act (Law No. 38 from 2012) granted firefighting agencies the right to issue an order to submit materials to manufacturers and importers and the right to collect information from them (entered into force on April 1, 2013).

## 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 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.

The fires involving automobiles and other vehicles, as well as electronic appliances and burning appliances, that occurred in 2015 (January - December 2015) were aggregated based on what was reported by firefighting agencies. From this, it was discovered that of the total of 770 product fires, 142 were fires deemed to have been caused by product defects, 446 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 fires where the cause could not be identified, and 182 were fires that are still currently under investigation (Fig. 1-1-28).

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.

**Table 1-1-40 No. of cases of special fire defense equipment certified: 60 in total**

(As of March 31, 2016)

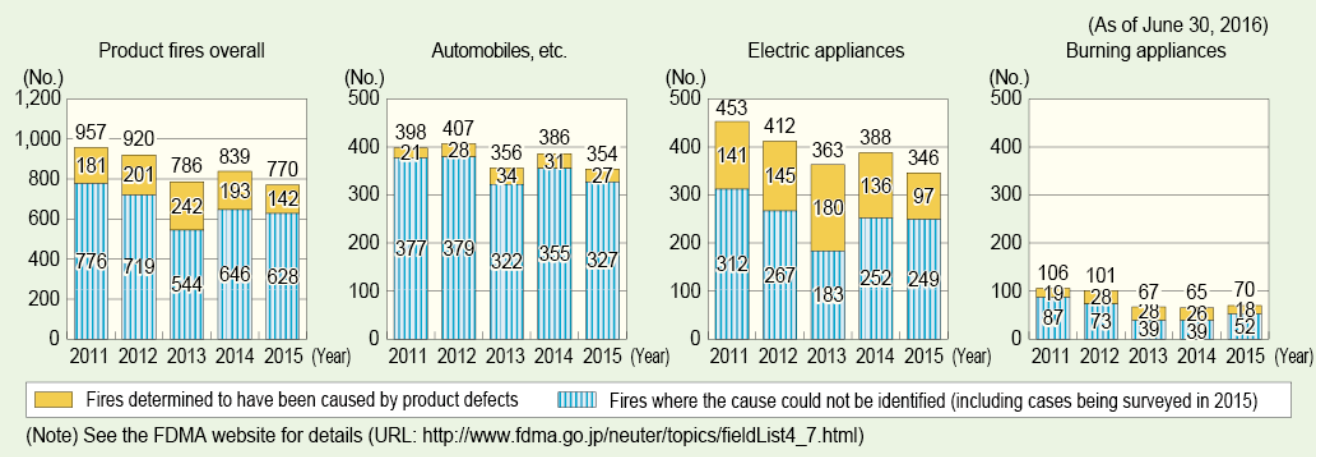
| Special fire defense equipment | Overview | Substitutable fire defense equipment | Cases certified |
|---|---|---|---|
| Pressurized smoke control systems | These are systems that supply air to and pressurize bases for firefighting activities such as the rooms attached to special evacuation staircases and the lobbies for emergency elevators in order to ensure a certain degree of safety for these bases. They also have the function of effectively supporting the firefighting activities of f irefighting teams during fires by protecting them from smoke and heat by means of dispersing smoke from rooms that are on fire (notification standards enacted on September 15, 2009). | Smoke control systems | 25 |
| Fire extinguishers that use dodecafluoro-2-methylpentan-3-one (FK-5-1-12) as their extinguishing agent | These are fire extinguishers that release dodecafluoro-2-methylpentan-3-one (FK-5-1-12), which is a new type of gas extinguishing agent, from their spray heads, and which are used in unmanned computer rooms and the like. They offer features like an ozone layer depletion coefficient of zero, a small global warming coefficient, and excellent safety when it comes to the human body (revision of the Enforcement Regulations for the Fire Service Act from August 26, 2010). | Halon fire extinguishers | 3 |
| Comprehensive fire and disaster defense systems that use multiple comprehensive control boards | These are systems in which multiple comprehensive control boards are installed at large / multi-story fire prevention properties in each area according to the management zones and the building's structure to perform decentralized management for fire prevention and firefighting in each of its respective areas. The systems also transmit information and perform interlinked controls between the comprehensive control boards and organically monitor and control the fire prevention property in question on the whole. | Comprehensive control panels | 6 |
| Disaster prevention systems equipped with monitoring functions for the rate of fire temperature increases | These are systems that add monitoring functions for the rate of fire temperature increases to conventional automatic fire alarms, which makes it possible to determine the spread of fires faster and more reliably. | Automatic fire alarms | 4 |
| Fire extinguishers for parking lots with closed heads | These extinguishers have closed heads within the vicinity that automatically begin operating in response to fires in parking lots to effectively extinguish them via the water-based extinguishing agent emitted from their heads (notification standards enacted on March 28, 2014). | Foam fire extinguishers | 10 |
| Sprinkler systems that use inverter control pumps | These fire extinguishers adjust the discharge pressure for the pressurized water supply equipment by using an inverter attached to a conventional pump system to control the number of revolutions of the electric motors for each hazard area. This makes it possible to discharge water at the proper pressure for all of the sprinkler heads within the building (revision of the Enforcement Regulations for the Fire Service Act from December 26, 2008). | Sprinkler systems | 1 |
| Sprinkler systems with combined air conditioner and piping | These fire extinguishers successfully conserve resources and cut costs by partially combining the functions of a sprinkler system with the piping for a radiation panel-style air conditioner while ensuring the firefighting safety functions required of a sprinkler system. | Sprinkler systems | 1 |
| Fire extinguishers that use closed spray heads | These fire extinguishers use the newly developed closed spray heads. By using a deflector devised to offer higher discharge pressure and a more effective spray pattern than ordinary spray fire extinguishers, they are highly effective at both fighting fires and inhibiting their spread. | Spray fire extinguishers | 4 |
| Natural smoke control systems for large spaces | These are smoke control systems that disperse smoke using the airflow produced by ensuring air supply ports and exhaust ports when smoke detectors and other equipment detect fires. They achieve smoke dispersal functions that are equivalent to or greater than those of smoke control equipment with specifications for large spaces. | Smoke control systems | 2 |
| Nitrogen gas fire extinguishers that prolong the radiative time | These are fire extinguishers that use the same devices as those used on conventional fire extinguishers that use inert gas (nitrogen). They prolong the radiative time for the extinguishing agent, while also ensuring airtightness by turning protected zones into fire partitions from incombustible zones. | Inert gas fire extinguishers | 4 |
| Total | | | 60 |

**Table 1-1-41** **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 Services 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 buildings 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 Services 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 Services Act and the Fire Prevention Ordinance (Example). Mandated the submission of plans related to operations necessary for fire prevention at outdoor event venues 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 Services 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. |

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.

**Fig. 1-1-28** **Trends in the survey results on product fires over the past five years**




(Note) See the FDMA website for details (URL: http://www.fdma.go.jp/neuter/topics/fieldList4_7.html)

## 11. Promoting Fire Prevention Measures at Outdoor Event Venues

In August 15, 2013, a fire broke out at the venue for a fireworks show in Fukuchiyama City, Kyoto, that involved enormous human suffering in the sense that 3 people died and 56 were injured. Following this, the Order for Enforcement of the Fire Services Act was revised in December 2013 and the Fire Prevention Ordinance (Example) was revised in January 2014 in order to promote fire prevention measures at outdoor event venues. These mandated initiatives like preparing fire extinguishers when handling equipment that use fire at outdoor event venues and the like, and appointing managers for fire prevention at those large-scale outdoor and similar events that have been specially designated by fire chiefs. It also mandated that plans for the operations necessary for fire prevention be prepared and submitted.

Section 2

# Countermeasures to Disasters at Facilities for Hazardous Materials

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

Accidents at facilities for hazardous materials (see P23 *11) are broadly classified into fires (including explosions) and spills of hazardous materials (see P23 *10). The number of fire and spillage accidents at facilities for hazardous materials have been trending upward since 1994. In 2015 (January 1 - December 31, 2015), there were 215 fires and 365 spills for a total of 580 accidents. Although this is a decrease of 19 accidents compared with the previous year, accidents are still holding steady at a high level (Fig. 1-2-1).

## 1. Fire Accidents

The number of fire accidents that occurred at facilities for hazardous materials in 2015 rose by roughly 2.0-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. However, accidents caused by physical factors such as deterioration such as corrosion fatigue are also on an upswing.

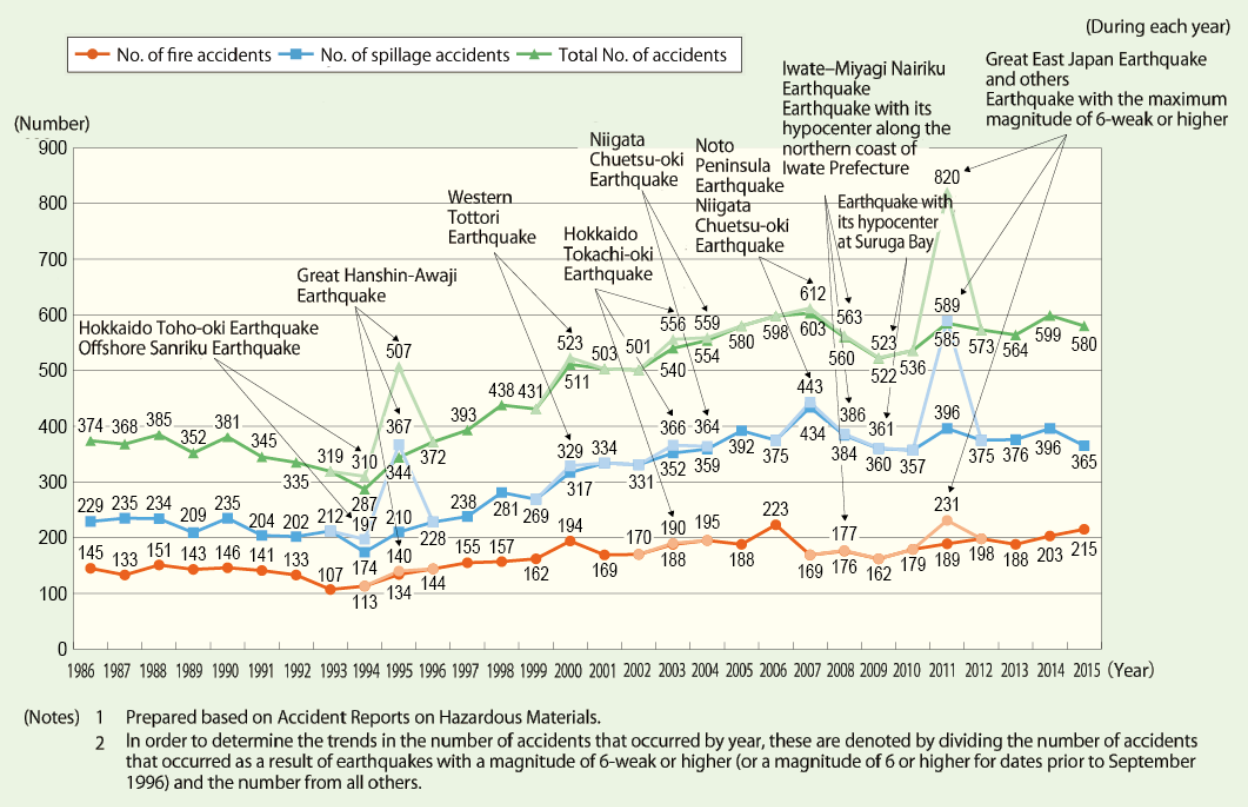
### (1) Number of Fire Accidents at Facilities for Hazardous Materials and the Damage Done

The number of fire accidents that occurred at facilities for hazardous materials in 2015 came to 215 (an increase of 12 year-on-year), the amount of damages came to 7,956 million yen (an increase of 5,816 million yen year-on-year), and they resulted in no death (a decrease of 1 person year-on-year) and 31 people injured (a decrease of 33 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 94.4% of the total accidents (Fig. 1-2-3).

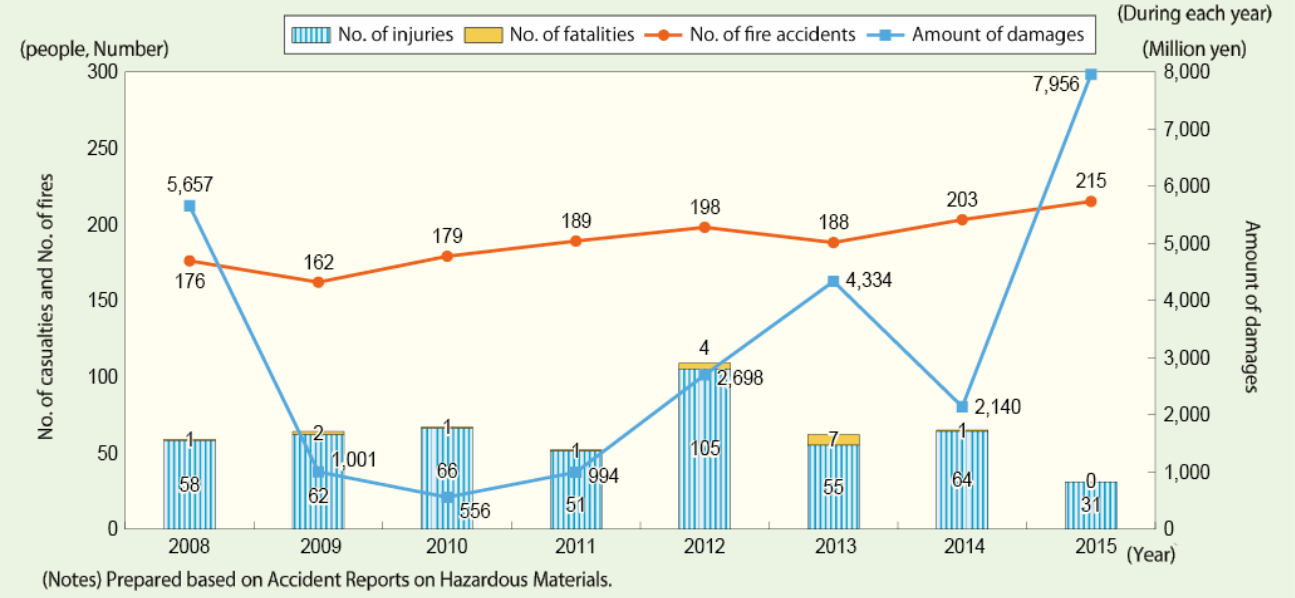
Conversely, of the 215 fire accidents 103 (or 47.9% of the total) were cases where a hazardous material served as the causative agent for the fire (Fig. 1-2-4).

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



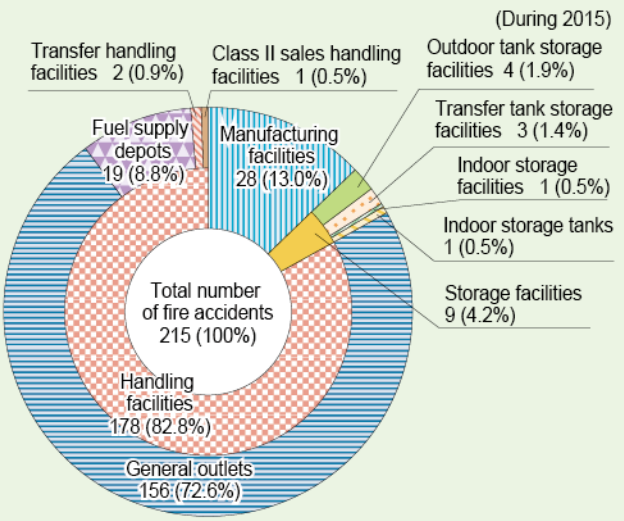

(Notes) 1 Prepared based on Accident Reports on Hazardous Materials.
2 In order to determine the trends in the number of accidents that occurred by year, these are denoted by dividing the number of accidents that occurred as a result of earthquakes with a magnitude of 6-weak or higher (or a magnitude of 6 or higher for dates prior to September 1996) and the number from all others.

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



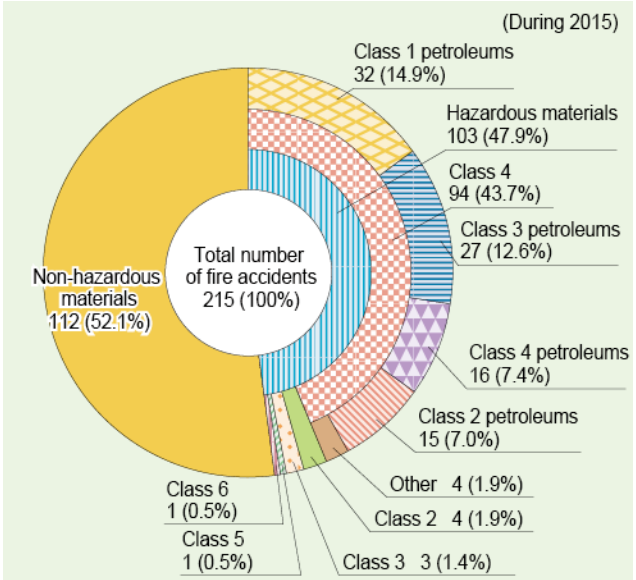

(Notes) Prepared based on Accident Reports on Hazardous Materials.

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




(Notes) 1 Prepared based on Accident Reports on Hazardous Materials.
2 The second decimal places were rounded up, so in some cases the totals may not align.

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




(Notes) 1 Prepared based on Accident Reports on Hazardous Materials.
2 The second decimal places were rounded up, so in some cases the totals may not align.

### (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 2015 reveals that human factors accounted for 57.7%; physical factors accounted for 27.9%; and the total for other causes, unknown, and under investigation came to 14.4% (Fig. 1-2-5).

When viewed by ignition source, those ignited by high-temperature surface heat were most common at 40 (an increase of 7 year-on-year), followed by 23 from static electricity sparks (a decrease of 19 year-on-year) and 22 from ignition due to overheating (the same 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 2015 came to nine (an increase of three year-on-year), and they left two people dead (an increase of one year-on-year) and 14 injured (an increase of nine year-on-year).

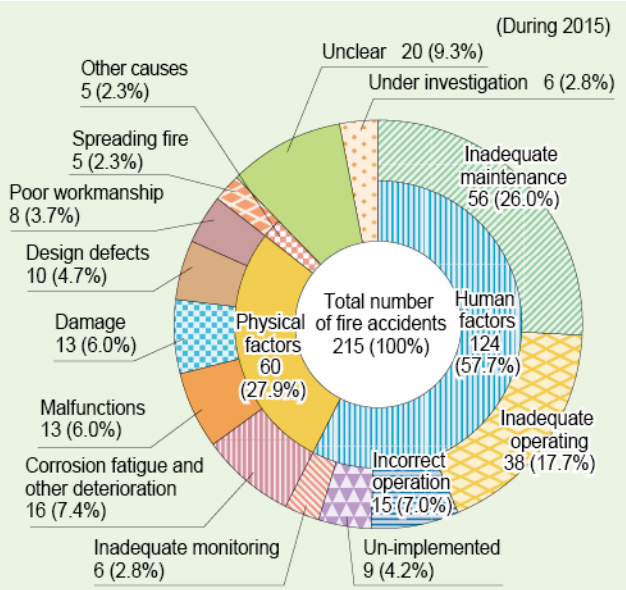
### (4) Fire Accidents during the Transportation of Hazardous Materials

In 2015, two fire accidents during the transportation of hazardous materials occurred (an increase of two year-on-year).

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

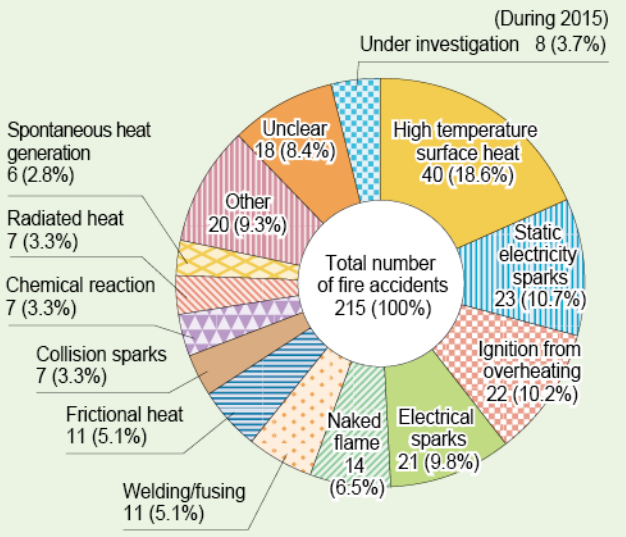
Continuing on from 2014, no fire accidents during the temporary storage or handling of hazardous materials occurred in 2015.

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




(Notes) 1 Prepared based on Accident Reports on Hazardous Materials.
2 The second decimal places were rounded up, so in some cases the totals may not align.

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




(Notes) 1 Prepared based on Accident Reports on Hazardous Materials.
2 The second decimal places were rounded up, so in some cases the totals may not align.

## 2. Spillage Accidents

The number of spillage accidents involving hazardous materials that occurred at facilities for hazardous materials in 2015 rose by roughly 2.1-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, in particular is the largest.

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

The number of spillage accidents involving hazardous materials that occurred at facilities for hazardous materials (which did not turn into fires) in 2015 came to 365 (a decrease of 31 year-on-year), the amount of damages came to 441 million yen (an increase of 17 million yen year-on-year), and they two people dead (an increase of two year-on-year) but left 14 people injured (a decrease of 11 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 outdoor storage tank facilities and transfer tank storage facilities in that order (Fig. 1-2-8).

Conversely, 96.7% 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 petroleums (gasoline, etc.) accounts for most of these, followed by Class 2 petroleums (light oil, etc.), Class 3 petroleums (heavy oil, etc.), and Class 4 petroleums (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 2015 reveals that human factors accounted for 38.6%; physical factors accounted for 54.0%; and the total for other causes, unknown, and under investigation came to 7.4% (Fig. 1-2-10).

When viewed by causative factor, those caused by deterioration such as corrosion fatigue were most common at 131 (a decrease of 17 year-on-year), followed by 45 from inadequate operating checks (a decrease of 8 year-on-year) and 32 from inadequate monitoring (an increase of 3 year-on-year) (Fig. 1-2-10).

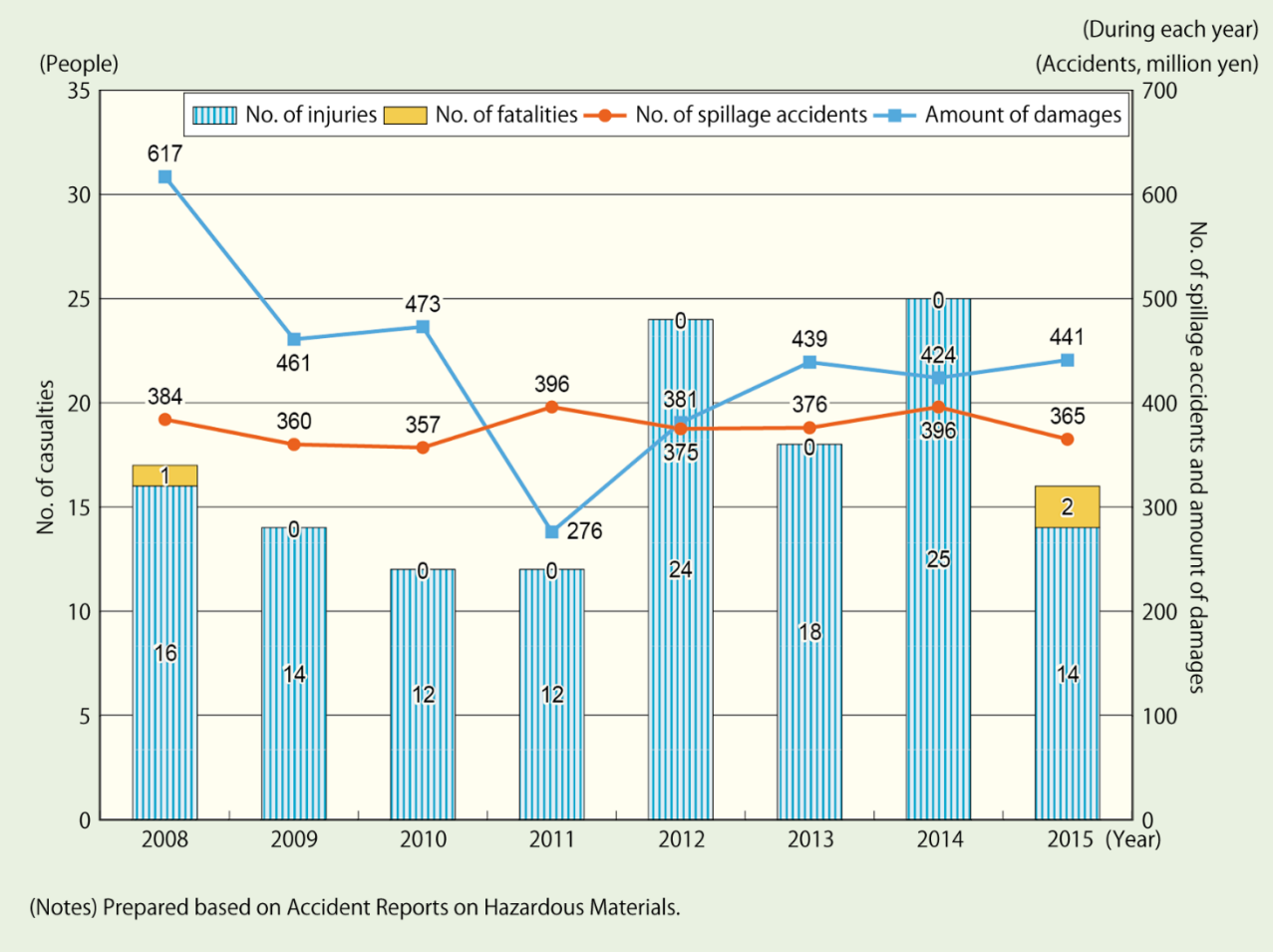
### (3) Spillage Accidents at Unauthorized Facilities

The number of spillage accidents that occurred at unauthorized facilities in 2015 came to five (an increase of two year-on-year), with no casualties (same number of dead and injured people year-on-year).

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

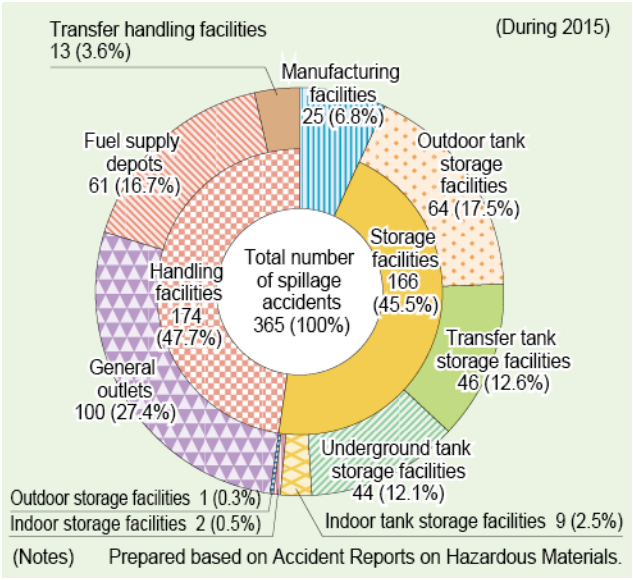
The number of spillage accidents that occurred during the transportation of hazardous materials in 2015 came to 12 (the same year-on-year), and while there were no deaths (the same year-on-year) one person was injured (a decrease of 4 year-on-year).

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



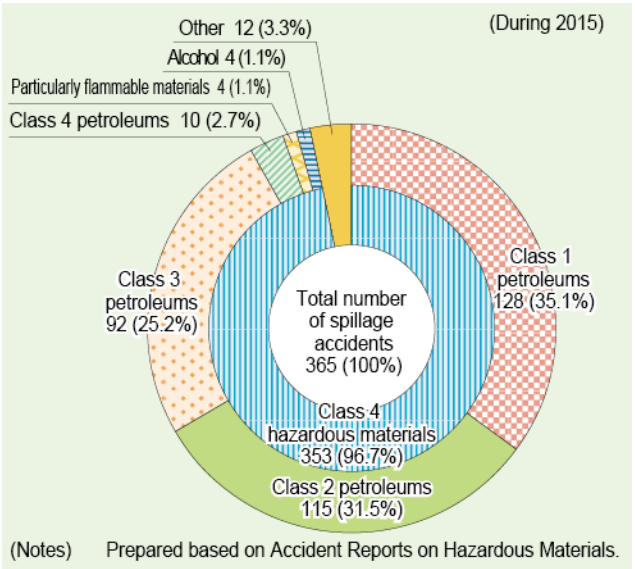

(Notes) Prepared based on Accident Reports on Hazardous Materials.

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




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

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




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

# 1. Regulations on Hazardous Materials

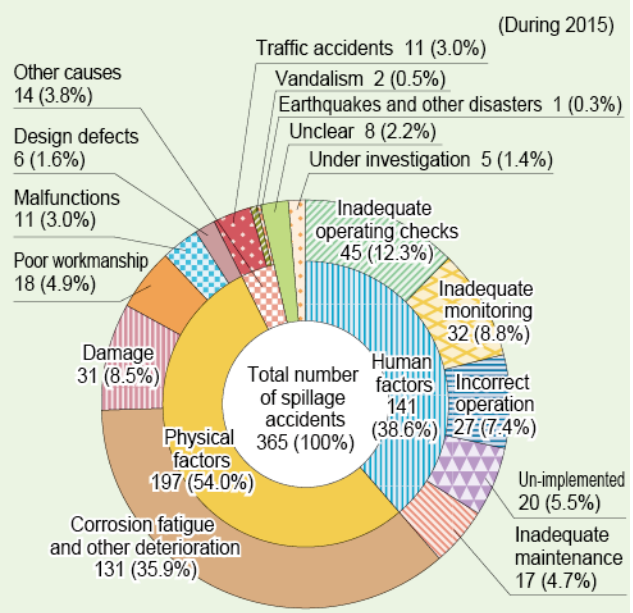
## (1) Regulatory Structure for Hazardous Materials

The Fire Services 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."* [10] Enacting safety regulations for the storage, handling and transportation of these hazardous materials has been posited as contributing to the promotion of social welfare by preventing fires; protecting the lives, health, and property of the public from fires; and mitigating the damage from fires.

Regulations concerning hazardous materials have been instituted in a uniform manner throughout Japan through the partial revisions to the Fire Services 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* [11] 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).

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




(Notes) 1 Prepared based on Accident Reports on Hazardous Materials.
2 The second decimal places were rounded up, so in some cases the totals may not align.

*10 Hazardous materials: The Fire Services 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 Services 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, trinitrotoluen, 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 |

*11 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 Services 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) |
| | Outdoor storage facilities | Store certain hazardous materials in containers in outdoor locations |
| Handling facilities | 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) |

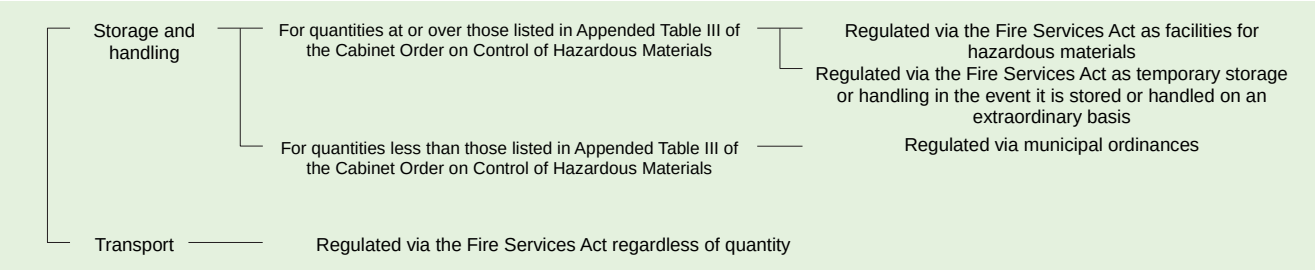
- Hazardous materials of volumes at or above the designated quantities (the quantity at which authorization is necessary to store or handle a material as designated by the Fire Services Act) cannot be stored or handled at locations other than facilities for hazardous materials. Persons attempting to 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) Recent Status for Hazardous Material Regulations

### A. Considering Revisions to Hazardous Material Regulations based on Advances in Science and Technology

The general safety regulations for high pressure gas were revised and technical standards for compressed hydrogen filling stations at which equipment like liquid hydrogen storage tanks is installed were set in place as initiatives geared towards achieving a hydrogen society. In light of this, the Review Committee on the Safety of Attaching Liquid Hydrogen Filling Stations to Fueling Stations was held. In June 2015, it revised regulations related to rules for hazardous materials to prescribe that safety measures are to be taken in regards to matters like the distance between liquid hydrogen storage tanks and fixed fueling equipment.

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




Moreover, based on the Implementation Plan for Regulatory Reforms (approved by the Cabinet in June 2013), the Review Committee on Modalities for Safety Measures on the Sharing of Stopping Spaces for Fueling Stations with Attached Natural Gas Stations has been held since August 2013. The committee evaluated the danger of sharing stopping spaces for fueling with natural gas with those for gasoline, and considered the necessary safety measures. Based on the results of said review, it decided to revise the ministerial ordinance.

What is more, the FDMA is coping with the new challenges surrounding the administration of hazardous materials, while also searching for ways to operate efficient fueling stations in hilly and mountains regions and the like according to their unique regional characteristics. In light of this, it has held the Review Committee on Modalities for Safety Measures for the Operation of Fueling Stations according to Regional Characteristics since June 2015. It evaluated the dangers of configurations in which employees who handle hazardous materials promptly head out to fueling stations from nearby shops or the like when called by customers to refuel their vehicles, and reviewed the necessary safety measures for this. In March 2016 it prepared the Guidelines on Safety Measures for Refueling Vehicles On-demand, and notified firefighting agencies and related industry groups throughout Japan of these.

### B. Responses based on Accidents

At a fire that broke out at a worksite in Machida City, Tokyo on May 13, 2014, it took a long time to get the fire under control because the facility was storing magnesium and other substances that cannot be extinguished using water. As a result, the Survey and Review Committee on Substances Potentially Posing a Fire Hazard performed various surveys and reviews on points to keep in mind for firefighting activities on substances like magnesium. In June 2016, it prepared the Manual of Safety Measures for Magnesium and Similar Substances, and notified firefighting agencies and related industry groups throughout Japan of this manual.


Fueling station with an attached hydrogen station

### C. Safety Measures for Facilities for Hazardous Materials based on the Great East Japan Earthquake

The FDMA is mounting the necessary responses regarding safety measures for facilities for hazardous materials based on the extent of the damage from the Great East Japan Earthquake.

In March 2013, it compiled the Review Report on Modalities for Safety Measures on Temporary Storage or Handling based on the Great East Japan Earthquake. Following this, in October 2013 it prepared the Guidelines on Safety Measures and Procedures for the Temporary Storage and Handling of Hazardous Materials during Earthquakes. This compiled together safety measures for temporary storage and handling of such materials, points to keep in mind regarding application procedures, and the storage and handling of hazardous materials at facilities for hazardous materials on a temporary basis in order to facilitate the temporary storage and handling of such substances and ensure this is carried out appropriately. These were notified to firefighting agencies and others throughout Japan.

What is more, in March 2014 the FDMA prepared the Guidelines on Countermeasures against Earthquakes at Facilities for Hazardous Materials. This compiled together points and matters to keep in mind for earthquake countermeasures at facilities for hazardous materials based on lessons learned from past cases of disaster damage as well as successful case examples, along with technologies disseminated in the wake of earthquakes and the knowledge gained from them. It was designed to ensure that the operators of facilities for hazardous materials can take the appropriate countermeasures against earthquakes (including the operator's response when an earthquake occurs, confirmation and emergency measures for the damage after the earthquake, temporary responses, handling restoration, etc.). It then notified firefighting agencies and related industry groups throughout Japan of the guidelines.

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

### A. Number of Facilities for Hazardous Materials

The total number of facilities for hazardous materials (number of facilities for construction permits) as of March 31, 2016 came to 416,234 (Table 1-2-1). A look at the share of facilities by their classification reveals that storage facilities account for the majority at 68.4%, followed by handling facilities at 30.3% and then manufacturing facilities at 1.2% (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, 2016, those facilities for hazardous materials that hold 50-times the designated quantities or less account for 75.8% of the total (Fig. 1-2-13).

## (4) 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, 2016 the (cumulative) total number of people who have passed the hazardous material engineer test since the hazardous material engineer system was launched came to 9,137,022 people. They play a significant role in ensuring safety at facilities for hazardous materials.

### A. Hazardous Material Engineer Tests

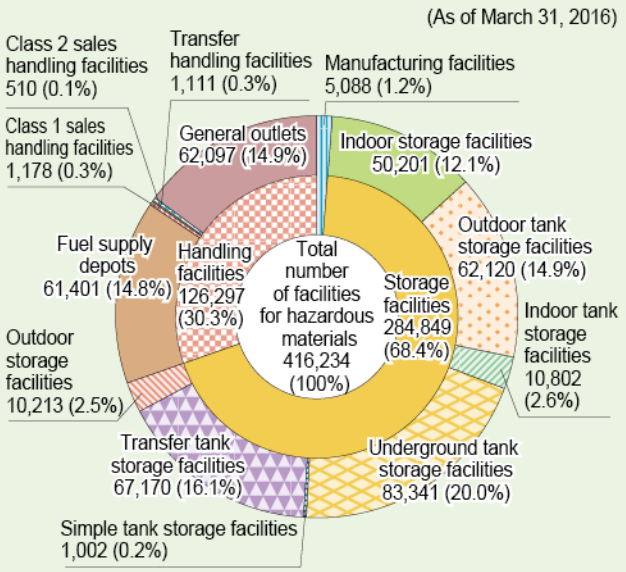
Hazardous material engineer tests were held 578 times throughout Japan in FY2015 (an increase of 31 year-on-year). They were taken by 401,096 people (a decrease of 13,910 people year-on-year), with 152,111 people passing (a decrease of 6,803 people year-on-year) for an average pass rate of roughly 37.9% (a decrease of 0.4 points year-on-year). (Fig. 1-2-14)

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

(As of March 31, 2016)

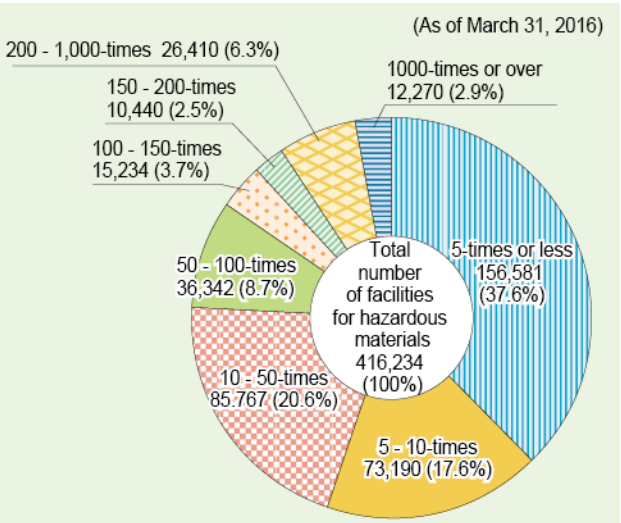
| Facility \ Year | | 2012 (A) | 2013 | 2014 | 2015 (B) | 2016 (C) | Rate of change (%) (C/A−1)×100 | Rate of change (%) (C/B−1)×100 |
|---|---|---|---|---|---|---|---|---|
| Manufacturing facilities | | 5,150 | 5,160 | 5,154 | 5,106 | 5,088 | -1.2 | -0.4 |
| Storage facilities | Indoor storage facilities | 51,516 | 51,245 | 50,888 | 50,553 | 50,201 | -2.6 | -0.7 |
| | Outdoor storage tanks | 66,294 | 65,330 | 64,206 | 63,093 | 62,120 | -6.3 | -1.5 |
| | Indoor storage tanks | 11,679 | 11,502 | 11,296 | 11,021 | 10,802 | -7.5 | -2.0 |
| | Underground storage tanks | 96,120 | 91,255 | 87,831 | 85,499 | 83,341 | -13.3 | -2.5 |
| | Simple storage tanks | 1,114 | 1,101 | 1,060 | 1,019 | 1,002 | -10.1 | -1.7 |
| | Transfer storage tanks | 68,299 | 67,916 | 67,665 | 67,498 | 67,170 | -1.7 | -0.5 |
| | Outdoor storage facilities | 10,953 | 10,793 | 10,598 | 10,351 | 10,213 | -6.8 | -1.3 |
| | Subtotal | 305,975 | 299,142 | 293,544 | 289,034 | 284,849 | -6.9 | -1.4 |
| Handling facilities | Fuel supply depots | 66,470 | 64,593 | 63,222 | 62,269 | 61,401 | -7.6 | -1.4 |
| | Class 1 sales handling facilities | 1,333 | 1,293 | 1,245 | 1,209 | 1,178 | -11.6 | -2.6 |
| | Class II sales handling facilities | 537 | 538 | 529 | 518 | 510 | -5.0 | -1.5 |
| | Transfer handling facilities | 1,153 | 1,151 | 1,142 | 1,127 | 1,111 | -3.6 | -1.4 |
| | General outlets | 66,659 | 65,041 | 63,705 | 62,766 | 62,097 | -6.8 | -1.1 |
| | Subtotal | 136,152 | 132,616 | 129,843 | 127,889 | 126,297 | -7.2 | -1.2 |
| Total | | 447,277 | 436,918 | 428,541 | 422,029 | 416,234 | -6.9 | -1.4 |

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



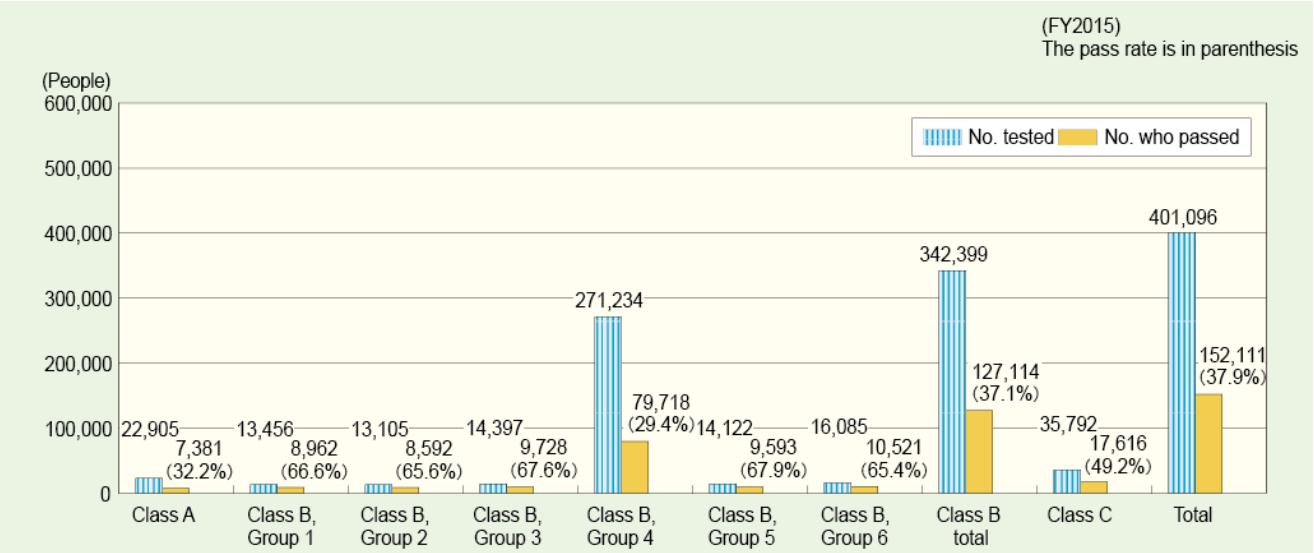

(Notes) 1 Prepared based on the Survey on Regulation Work of Hazardous Materials.
2 The second decimal places were rounded up, so in some cases the totals may not align.

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




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

**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 Engineers and Fire Protection Engineers by the Japan Fire Engineering Qualification Center

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 8.9% of the total. These two test types accounted for 76.5% of the total. The number of people who passed these two test types accounted for 64.0% 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 FY2015 safety training courses were held a total of 1,407 times throughout Japan (an increase of 44 times year-on-year), and were attended by 178,843 people (an increase of 15,866 people year-on-year) (Table 1-2-2).

### (5) Establishment of Safety Systems at Business Establishments

As of March 31, 2016, the total number of business establishments that owned facilities for hazardous materials came to 191,451 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 (1,630 business establishments), and preparing fire and disaster prevention rules (45,190 business establishments). Moreover, it has been mandated that said business establishments that own certain facilities for hazardous materials and that store or handle hazardous materials at or above certain quantities must establish fire defense organizations for self protection (75 business establishments) and appoint hazardous material safety supervising managers (211 business establishments).

### (6) Safety Inspections

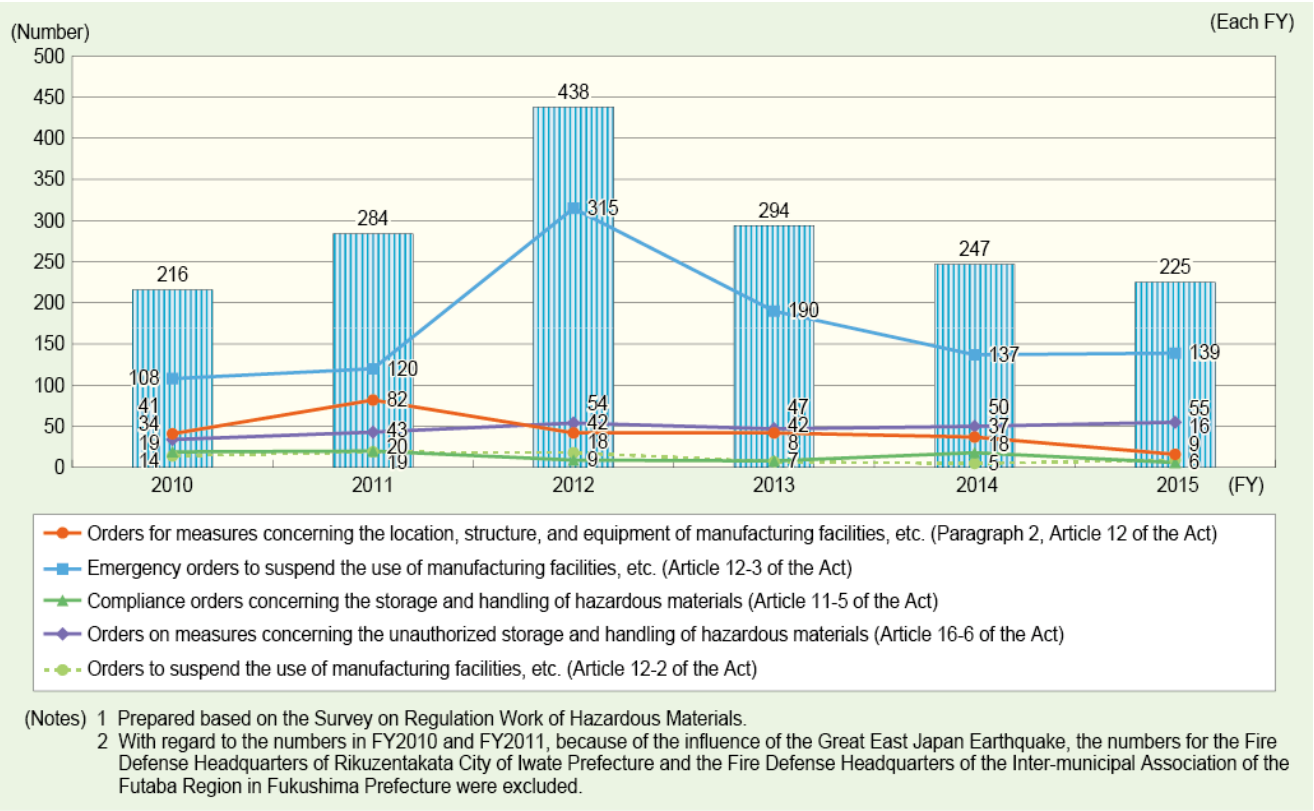
It has been mandated that the owners of outdoor storage tanks and transfer handling facilities at or over a certain size must undergo inspections on the safety of facilities for hazardous materials performed by municipal mayors and similar officials (safety inspections) at regular fixed intervals according to factors like the facilities' size. In FY2015, 276 safety inspections were performed, of which 267 involved outdoor storage tanks and 9 involved transfer handling facilities.

**Fig. 1-2-14** **Number of attendees at safety training courses for engineers and a breakdown of the certification of hazardous material engineers by type**

(As of March 31 of each FY)

| Category / FY | 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 | | | |
| 2011 | 171,378 | 14,361 | 7,545 | 8,474 | 6,728 | 147,876 | 7,698 | 9,430 | 187,751 | 24,458 | 226,570 | 1,390 |
| 2012 | 156,597 | 12,040 | 7,720 | 8,196 | 6,906 | 142,599 | 7,866 | 9,088 | 182,375 | 23,887 | 218,302 | 1,326 |
| 2013 | 164,296 | 13,703 | 8,969 | 9,655 | 7,948 | 148,714 | 9,367 | 10,278 | 194,931 | 24,910 | 233,544 | 1,374 |
| 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 |

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




(Notes) 1 Prepared based on the Survey on Regulation Work of Hazardous Materials.
2 With regard to the numbers in FY2010 and FY2011, because of the influence of the Great East Japan Earthquake, the numbers for the Fire Defense Headquarters of Rikuzentakata City of Iwate Prefecture and the Fire Defense Headquarters of the Inter-municipal Association of the Futaba Region in Fukushima Prefecture were excluded.

### (7) 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 Services 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 FY2015, onsite inspections were carried out a total of 198,862 times at 183,684 facilities for hazardous materials.

In cases where violations of the Fire Services 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 FY2015 municipal mayors or similar officials issued such orders to take measures in 225 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, their operators must listen to the opinions of the Minister of Internal Affairs and Communications regarding formulating basic plans and 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 onsite 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 Services 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

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

### 1. Number of Accidents and Damage

The total number of accidents that occurred at specified business establishments* [12] in petroleum industrial complexes and other special disaster prevention areas (see White Paper P27; hereafter referred to as "special disaster prevention areas") in 2015 came to 235. A breakdown of this reveals that there was one accident from earthquakes and tsunamis (hereafter referred to as "earthquake-induced accidents") and 234 accidents that were not earthquake-induced (hereafter referred to as "general accidents"). The number of earthquake-induced accidents increased by one over those from the previous year (zero), while general accidents declined by 19 from the previous year (253) (Fig. 1-3-1).

Looking at this by type of accident reveals there were 107 fires (an increase of 3 year-on-year), 7 explosions (an increase of 1 year-on-year), 118 leaks (a decrease of 17 year-on-year), and 3 other accidents (a decrease of 5 year-on-year) (Table 1-3-1).

Looking at trends in the number of general accidents that have occurred reveals that these had been on a downswing since the enactment of the Act on the Prevention of Disaster in Petroleum Industrial Complexes and Other Petroleum Facilities. However, this has been on an upswing since 1994, and the number surged in 2006. Since then, it continued to decline for two years in a row in 2008 and 2009, after which it once again swung upwards in 2010 before reaching a record high in 2014.

The number of casualties from general accidents that occurred in 2015 came to 0 deaths and 33 injuries.

What is more, looking at the causes behind general accidents reveals that physical factors such as corrosion and other types of deterioration and poor workmanship accounted for 120 of the accidents (51.3%), while human factors such as inadequate operating confirmation and inadequate operation and maintenance accounted for 103 (44.0%).

### 2. Characteristics of Accidents

#### (1) Number of Accidents by the Classification of Specified Business Establishments

Looking at the number of general accidents by the classification of specified business establishments reveals that Class 1 business establishments accounted for 173 (147 of which were at layout business establishments* [13]), which account for 73.9% of the total (Table 1-3-2).

#### (2) Number of Accidents at Specified Business Establishments by Business Category

As for the number of general accidents that occurred at specified business establishments by business category, there were 75 chemical industry-related accidents (32.0%), 74 petroleum and coal products manufacturing industry-related accidents (31.6%), 36 steel industry-related accidents (15.4%), 21 electrical industry-related accidents (9.0%), and 28 accidents in other business categories (12.0%).

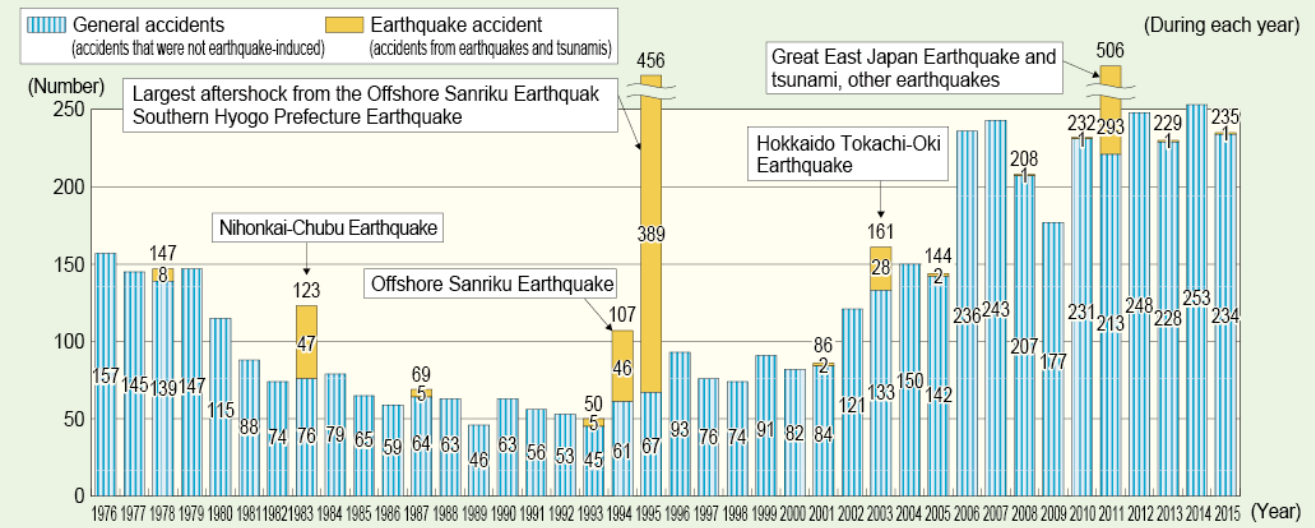
## Current Status of Damage Countermeasures at Petroleum Industrial Complexes

In order to prevent disasters from occurring and spreading at petroleum industrial complexes, where large quantities of hazardous materials, high pressure gasses, and other flammable materials are concentrated, efforts are made to establish comprehensive disaster prevention structures for these. This includes by applying the various regulations from the Fire Services 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 layouts of the various facilities and disaster prevention equipment.

*12 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).

*13 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 P90).

## Fig. 1-3-1 Trends in the number of accidents that occurred at petroleum industrial complexes




(Notes) Prepared based on the Overview of Accidents at Specified Business Establishments in Petroleum Industrial Complexes and Other Special Disaster Prevention Areas (2014).

## Table 1-3-1 Accidents that occurred at petroleum industrial complexes

(During each year)

| Type | | Accidents in 2015 | | | Accidents in 2014 | | |
|---|---|---|---|---|---|---|---|
| | | | General accidents | Earthquake-induced accidents | | General accidents | Earthquake-induced accidents |
| Fires | | 107 (45.5%) | 107 (45.7%) | — (—%) | 104 (41.1%) | 104 (41.1%) | — (—%) |
| Explosions | | 7 (3.0%) | 7 (3.0%) | — (—%) | 6 (2.4%) | 6 (2.4%) | — (—%) |
| Leaks | | 118 (50.2%) | 117 (50.0%) | 1 (100%) | 135 (53.4%) | 135 (53.4%) | — (—%) |
| Other | Damage | 3 (1.3%) | 3 (1.3%) | — (—%) | 8 (3.1%) | — (—%) | — (—%) |
| | Accidents not corresponding to the above | — (—%) | — (—%) | — (—%) | — (—%) | — (—%) | — (—%) |
| Total | | 235 | 234 | 1 | 253 | 253 | — |

(Notes) 1 Prepared based on the Overview of Accidents at Specified Business Establishments in Petroleum Industrial Complexes and Other Special Disaster Prevention Areas (2014).
2 There was an earthquake-induced accident among the accidents from 2015.

## Table 1-3-2 Number of general accidents by classification for specified business establishments

(During 2015)

| Type of business establishment | | No. of specified 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 | | 370 | 173 | 73.9 | 0.47 |
| | Layout business establishments | 176 | 147 | 62.8 | 0.84 |
| | Other business establishments | 194 | 26 | 11.1 | 0.13 |
| Class 2 business establishments | | 327 | 61 | 26.1 | 0.19 |
| Total | | 697 | 234 | 100.0 | 0.34 |

(Notes) 1 Prepared based on the Overview of Accidents at Specified Business Establishments in Petroleum Industrial Complexes and Other Special Disaster Prevention Areas (2014).
2 The number of business establishments is as of April 1, 2014.

## 1. Current Status of Petroleum Industrial Complexes and Other Special Disaster Prevention Areas

As of April 1, 2016, 83 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 102 municipalities in 32 prefectures based on the Act on the Prevention of Disaster in Petroleum Industrial Complexes and Other Petroleum Facilities (Fig. 1-3-2). These special disaster prevention areas are under the jurisdiction of 90 fire defense headquarters.

What is more, 686 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, 363 are Class 1 business establishments (including 174 layout business establishments) and 323 are Class 2 business establishments.

See White Paper Attached Document 38 for information on things like the amount of petroleum that can be stored and handled and the amount of high-pressure gas that can be disposed of in special disaster prevention areas.

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

### (1) Establishing Disaster Prevention Schemes

The prefectures that contain special disaster prevention areas are moving forward with establishing disaster prevention structures in a 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) Responses Measures when Disasters Occur

When disasters occur in special disaster prevention areas, response measures consist of disaster management responses 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 activities to curb the damage, give instructions regarding the activities of disaster prevention organizations for self-defense, and carry out other roles that are important for the disaster response measures.

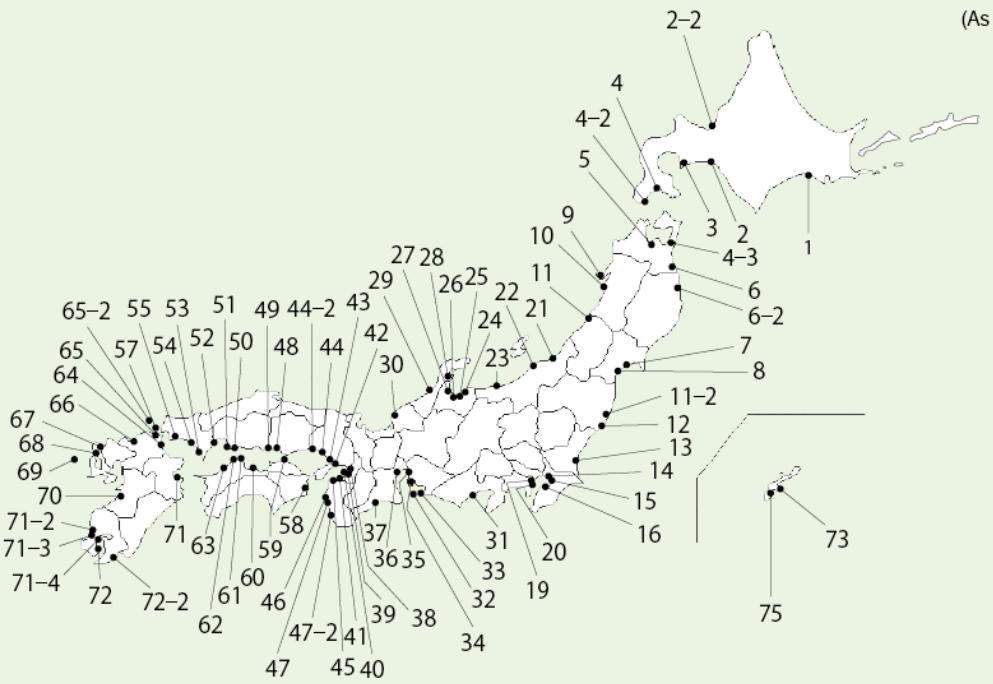
### (3) Maintaining the Firefighting Capabilities of Municipalities Containing Special Disaster Prevention Areas

There is the concern that disasters that occur within special disaster prevention areas will be large in scale and of a specialized type. Therefore, it is important to maintain firefighting capabilities in order to respond to said disasters. Through the Firefighting Maintenance Policies, which are based on municipal firefighting agencies, the FDMA denotes those firefighting capabilities that must be retained in order to handle disasters involving special disaster prevention areas, and strives to maintain these.

As of April 1, 2016, the firefighting agencies in municipalities containing a special disaster prevention area were found to be equipped with 76 large chemical firetrucks, 60 large, elevated water trucks, 87 foam solution transport vehicles, 21 large, elevated chemical water trucks, 2,988 kl of 3% fire-extinguishing foam, 580 kl of 6% fire-extinguishing foam, 21 fireboats, and more.

What is more, 27 foam solution storage facilities, 10 portable foam cannons, and other equipment is equipped in prefectures that contain special disaster prevention areas. This is designed to complement the firefighting capability of the municipalities while also enhancing and strengthening the disaster prevention structures for the special disaster prevention areas.

**Fig. 1-3-2** **Designation status for petroleum industrial complexes and other special disaster prevention areas**




| No. | Special disaster prevention areas | No. | Special disaster prevention areas | No. | Special disaster prevention areas | No. | Special disaster prevention areas | No. | Special disaster prevention areas |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Kushiro | 14 | North Keiyo coast | 34 | Kinuura | 50 | Etajima | 69 | Ainoura |
| 2 | Tomakomai | 15 | Central Keiyo coast | 35 | Port of Nagoya coast | 51 | Nomi | 69-2 | Kamigoto |
| 2-2 | Ishikari | 16 | South Keiyo coast | 36 | Yokkaichi coast | 52 | Iwakuni/Otake | 70 | Yatsushiro |
| 3 | Muroran | 19 | Keihin coast | 37 | Owase | 53 | Kudamatsu | 71 | Oita |
| 4 | Hokuto | 20 | Negishi coast | 38 | Osaka North Port | 54 | Shunan | 71-2 | Sendai |
| 4-2 | Shiriuchi | 22 | Port of Niigata (East) | 39 | Sakai Senboku coast | 55 | Ube/Onoda | 71-3 | Kushikino |
| 4-3 | Mutsuogawara | 23 | Port of Niigata (West) | 40 | Kansai International Airport | 57 | Mutsurejima | 71-4 | Kagoshima |
| 5 | Aomori | 24 | Naoetsu | 41 | Misaki | 58 | Anan | 72 | Kiire |
| 6 | Hachinohe | 25 | Toyama | 42 | Kobe | 59 | Bannosu | 72-2 | Shibushi |
| 6-2 | Kuji | 26 | Fuchiyu | 43 | Higashiharima | 60 | Niihama | 73 | Henza |
| 7 | Shiogama | 27 | Shinminato | 44 | Himeji coast | 61 | Namikata | 75 | Onaha |
| 8 | Sendai | 28 | Fushiki | 44-2 | Ako | 62 | Kikuma | | |
| 9 | Oga | 28-2 | Port of Nanao, Mimuro | 45 | Northern coast in north Wakayama | 63 | Matsuyama | | |
| 10 | Akita | 29 | Kanazawa Port north | 46 | Central coast in north Wakayama | 64 | Buzen | | |
| 11 | Sakata | 30 | Fukui coast | 47 | Southern coast in north Wakayama | 65 | Kitakyushu | | |
| 11-12 | Hirono | 31 | Shimizu | 47-2 | Kobo | 65-2 | Shirashima | | |
| 12 | Iwaki | 32 | Atsumi | 48 | Mizushima coast | 66 | Fukuoka | | |
| 13 | Kashima coast | 33 | Tahara | 49 | Fukuyama/Sasaoka | 68 | Fukushima | | |

*83 areas

## 3. Disaster Prevention Structures 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 that contain special disaster prevention areas (specified business operators) must set up disaster prevention organizations for self-defense, equip fire defense equipment, appoint disaster protection managers, prepare disaster prevention regulations, and so forth. It also stipulates that they are to establish joint disaster prevention associations,[*14] wide-area joint disaster prevention associations,[*15] and special disaster prevention area councils for petroleum industrial complexes and the like (hereafter referred to as "area councils")[*16] in order to establish disaster prevention structures through the combined efforts of the specified business establishments.

*14 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.

*15 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.

*16 Ring fires: Fires that occur at floating roof outdoor storage tanks in a ring pattern all the way around the tank in the gap between the floating roof and the tank's side panel

As of April 1, 2016, disaster prevention organizations for self-defense had been established at every specified business establishment (686 business establishments). In addition, 74 joint disaster prevention associations, 11 wide-area joint disaster prevention associations, and 55 area councils had been established. These disaster prevention organizations for self-defense, joint disaster prevention associations, and wide-area joint disaster prevention associations are constantly equipped with 5,642 disaster prevention personnel, 89 large chemical fire trucks, 51 large, elevated water trucks, 139 foam solution transport vehicles, 114 large, elevated chemical water trucks, 24 high capacity foam cannons, 26 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, 2016, 144 business establishments had installed embankments to prevent oil spills, 504 had installed outdoor water supply equipment for firefighting, and 570 had installed emergency notification systems, respectively.

### (2) Equipping High Capacity Foam Systems

During the Takachi-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.

Before this disaster struck, it had been assumed that the fires that would occur at floating roof outdoor storage tanks would be ring fires.[*17] But out of consideration for the risk of earthquakes occurring in Japan, the assumption that had to be made with the floating roof outdoor storage tanks was that a fire would spread to all of the tanks.

In light of this, the Act on the Prevention of Disaster 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 from three 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.

Water spraying drill using a high capacity foam system (Osaka/Wakayama wide-area joint disaster prevention council)

### (3) Enhancing Disaster Prevention Structures 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 firefighting activities difficult, and so such carry 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 are called upon to carry out precise firefighting activities. In addition, the disaster prevention personnel responsible for said activities require extensive knowledge and skills. The FDMA has denoted firefighting activities for disaster prevention organizations for self-defense and others in documents like Introduction to Disaster Prevention Activities for Disaster Prevention Organizations for Self-defense, Guidelines for Education and Drills for Disaster Prevention Personnel, and Disaster Prevention Activities Using High Capacity Foam Systems, in an effort to enhance disaster prevention structures for self-defense.

## 4. Layout Regulations for Business Establishments

### (1) Layout Regulations

Just regulating each individual facility at the business establishments that form petroleum industrial complexes as discrete units is not enough to prevent the spread of damage at such complexes. Rather, the business establishments as a whole must take measures from the

*17 Abnormal phenomena: Fires, spills of oil and other substances, and other such abnormal phenomena at specified business establishments.

perspective of preventing disasters and mitigating damage from them.

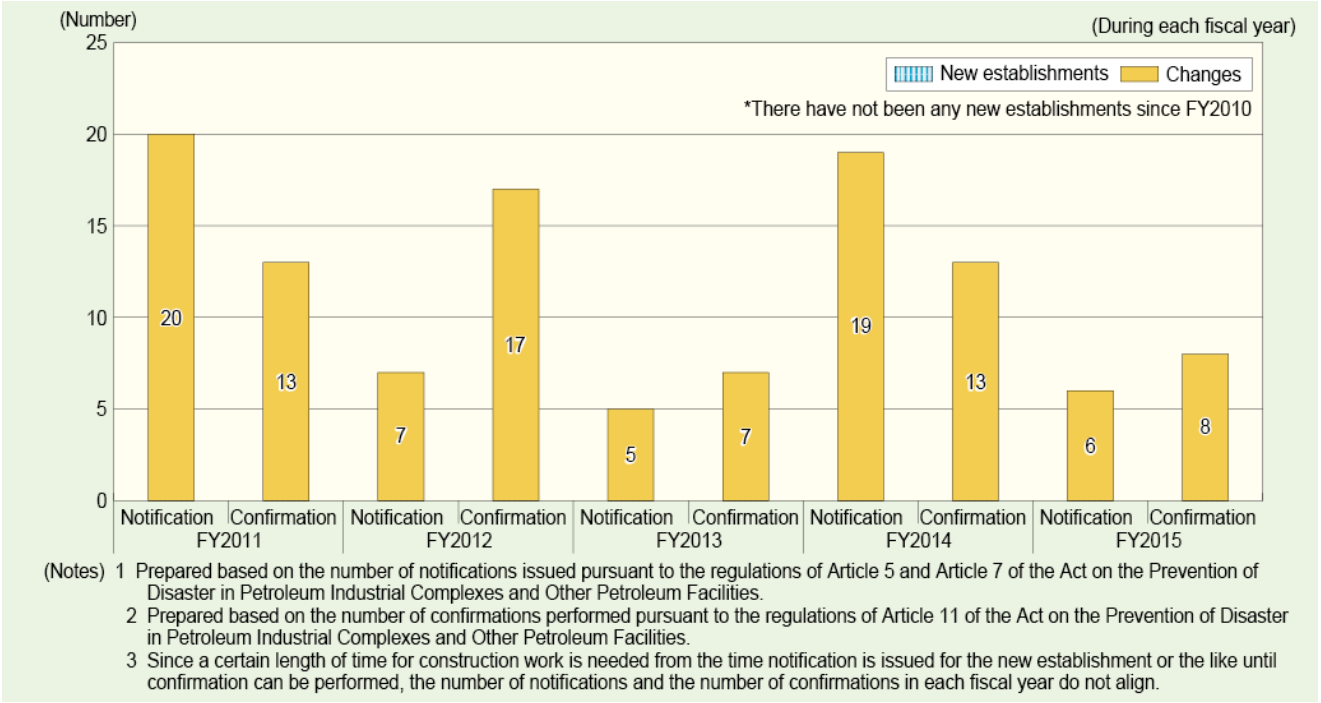
Therefore, the Act on the Prevention of Disaster in Petroleum Industrial Complexes and Other Petroleum Facilities mandates that layout business establishments must establish certain standards related to establishing facility areas on their sites and ensuring passageways. It also mandates that in cases like where business establishments are newly established or change their facility area layouts, they must provide notification of the relevant plans for this. It also says that they must undergo confirmation after these have been completed to ensure consistency with the plan (layout regulations).

The quantities of oil stored and handled and the quantities of high pressure gas processed at layout business establishments came to roughly 60% and 98%, respectively, of that for the specified business establishments as a whole (as of April 1, 2016).

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

The number of notifications for new establishments or changes in FY2015 from 174 layout business establishments (as of April 1, 2016) came to 6, while the number of confirmations in the same year came to 8 (Fig. 1-3-3).

**Fig. 1-3-3** **Status for the notification and confirmation of new business establishments subject to layout regulations**




(Notes) 1 Prepared based on the number of notifications issued pursuant to the regulations of Article 5 and Article 7 of the Act on the Prevention of Disaster in Petroleum Industrial Complexes and Other Petroleum Facilities.
2 Prepared based on the number of confirmations performed pursuant to the regulations of Article 11 of the Act on the Prevention of Disaster in Petroleum Industrial Complexes and Other Petroleum Facilities.
3 Since a certain length of time for construction work is needed from the time notification is issued for the new establishment or the like until confirmation can be performed, the number of notifications and the number of confirmations in each fiscal year do not align.

## 5. Other Disaster Countermeasures

### (1) Establishing Disaster Response Structures

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 immediately when any abnormal phenomena occurs.* [18] 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 installation plans and the cost burden for green buffer zones for disaster prevention established by local governments in the vicinities around special disaster prevention areas in order to prevent damage in said areas from spreading to the surrounding regions.

*18 Abnormal phenomena: Fires, spills of oil and other substances, and other such abnormal phenomena at specified business establishments.

Section 1

# Fire Defense Structures

## 1. Fire Defense Organizations

### (1) Standing Firefighting Agencies

Standing firefighting agencies refer to the fire defense headquarters and fire stations established in municipalities that are staffed by full-time personnel. As of April 1, 2016, there were 733 fire defense headquarters and 1,714 fire stations established throughout Japan (Table 2-1-1).

There are 163,043 firefighters, of which 4,597 are women (Table 2-1-1, Fig. 2-1-1).

The current firefighting structures found in municipalities can largely be categorized into: [1] Municipalities with both fire defense headquarters 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, 2016, 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 99.9% of the population now covered by standing fire defense structures.

Of these, there have been 291 fire defense headquarters established by special district authorities or extended associations (22 of which were established by extended associations). The 1,109 municipalities that have organized these (367 cities, 602 towns, and 140 villages) correspond to 65.6% 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 139 (34 cities, 85 towns, and 20 villages), which corresponds to 8.2% 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, 2016, the number of volunteer fire corps throughout Japan came to 2,211, while their volunteer members numbered 856,278. 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 mobilize personnel (there are roughly 5.3-times the number of volunteers as there are regular firefighters)
- Able to respond at a moment's notice (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 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 defense headquarters 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.

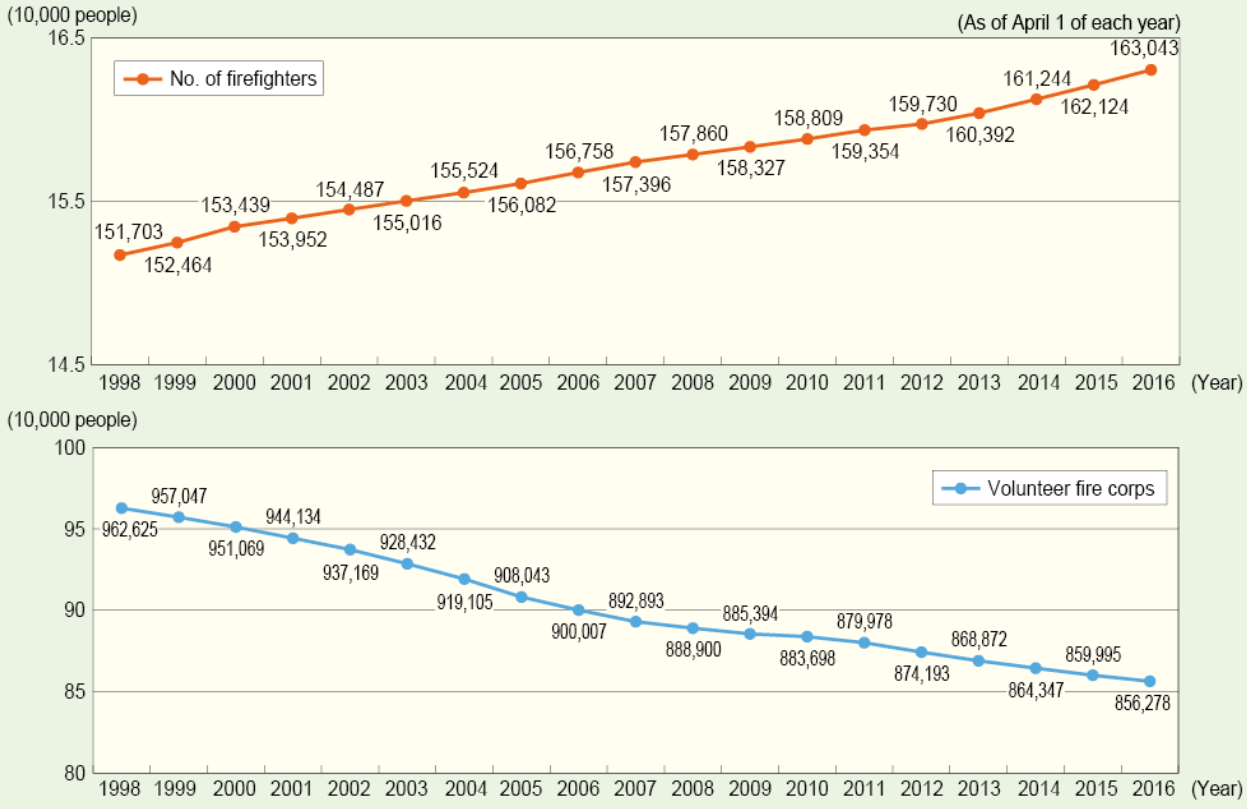
## Table 2-1-1 Current status of municipal fire defense organizations

(As of April 1 of each year)

| Classification | | 2015 | 2016 | Comparison | |
|---|---|---|---|---|---|
| | | | | Change | Rate of change (%) |
| Fire defense headquarters | Fire defense headquarters | 750 | 733 | -17 | -2.3 |
| | Breakdown Individual Cities | 399 | 390 | -9 | -2.3 |
| | Breakdown Individual Towns/villages | 56 | 52 | -4 | -7.1 |
| | Breakdown Special district authorities, etc. | 295 | 291 | -4 | -1.4 |
| | Fire stations | 1,709 | 1,714 | 5 | 0.3 |
| | Branch offices | 3,145 | 3,130 | -7 | -0.2 |
| | No. of firefighters | 162,124 | 163,043 | 919 | 0.6 |
| | Of which, No. of female firefighters | 4,425 | 4,597 | 172 | 3.9 |
| Volunteer fire corps | Volunteer fire corps | 2,208 | 2,211 | 3 | 0.1 |
| | Divisions | 22,549 | 22,484 | -65 | -0.3 |
| | No. of volunteers | 859,995 | 856,278 | -3,717 | -0.4 |
| | Of which, No. of female volunteers | 22,747 | 23,899 | 1,152 | 5.1 |

(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.

## Fig. 2-1-1 Trends in the number of firefighters




(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 from 2012 were tabulated using the numbers from the previous year (as of April 1, 2010).

Activities of Hiroshima City's volunteer fire corps during the landslide disaster that struck the city due to torrential downpours in August 2014

## Fig. 2-1-2 Breakdown of the establishment method for fire defense headquarters

(As of April 1, 2016)

| No. of fire defense headquarters | | | Municipalities | | | | Standing/non-standing | |
|---|---|---|---|---|---|---|---|---|
| | | | | Cities | Towns | Villages | | |
| 733 | | 1,690 municipalities | 1,690 | 791 | 738 | 161 | Municipalities with standing structures | |
| Individual | 442 | 442 municipalities | 442 | 390 | 51 | 1 | Individual | Establishment method |
| | | 139 municipalities | | | | | | |
| Special district authorities, etc. | 291 | 1,109 municipalities | 1,109 | 367 | 602 | 140 | Comprised of special district authorities, etc. | |
| | | 139 municipalities | 139 | 34 | 85 | 20 | Outsourced | |
| | | | 29 | – | 7 | 22 | Municipalities with non-standing structures | |
| | | | 1,719 | 791 | 745 | 183 | Total | |

(Notes) 1 Prepared based on the Report on Personnel Changes concerning Fire Defense Headquarters 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."

# 2. Fire and Disaster Defense Facilities

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

Fire defense headquarters 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 protection 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).

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

(As of April 1, 2016) (Unit: Vehicles, boats, or machines)

| Category | | Fire defense headquarters | Volunteer fire corps | Total |
|---|---|---|---|---|
| Fire pump vehicles | | 7,723 | 14,213 | 21,936 |
| Ladder-equipped vehicles | | 1,182 | 0 | 1,182 |
| Chemical fire trucks | | 979 | 6 | 985 |
| Ambulances | | 6,210 | 0 | 6,210 |
| Command vehicles | | 1,777 | 852 | 2,629 |
| Rescue vehicles | | 1,243 | 0 | 1,243 |
| Other firefighting vehicles | | 8,519 | 1,776 | 10,295 |
| Small power pumps | | 3,624 | 50,665 | 54,289 |
| Breakdown | Equipped on vehicles | 426 | 35,396 | 35,822 |
| | Equipped on wheeled platforms | 1,298 | 2,527 | 3,825 |
| | Other than those above | 1,900 | 12,742 | 14,642 |
| Firefighting boats | | 41 | 15 | 56 |
| Fire protection 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.

## (2) Fire Defense Communication Equipment

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

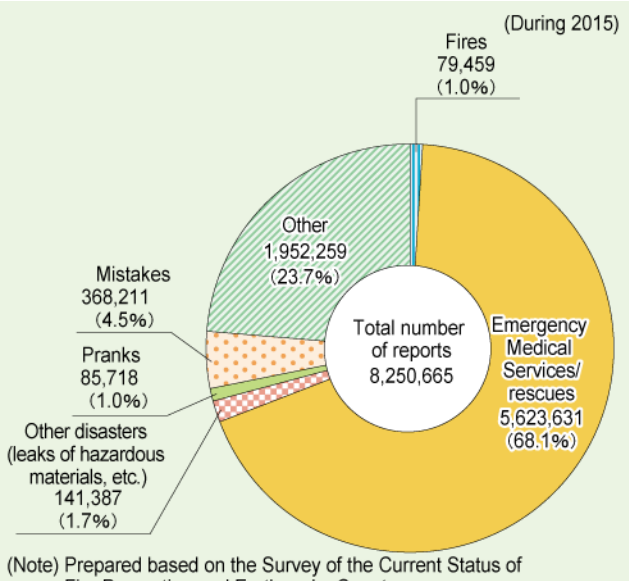
### A. Calls to 119

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 (see White Paper "Fig. 2-10-2. Overview of the fire and disaster defense communication network" on p. 226).

The number of incidents reported to 119 throughout 2015 came to 8,250,665. A breakdown of the reported details shows that the number of reported cases related to medical emergencies and rescues accounted for 68.1% of the total (Fig. 2-1-3).

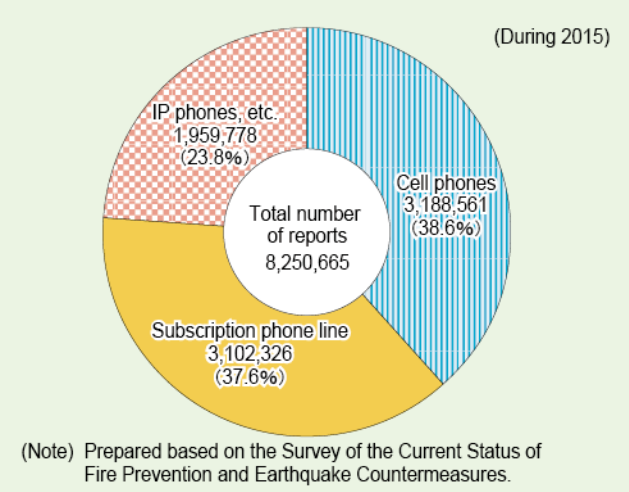
### Fig. 2-1-3 Number of reports to 119 (by the reported details)




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

Following the recent popularization of cell phones and IP phones[*19] (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 38.6% and 23.8%, respectively (Fig. 2-1-4).

**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.

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 via reports to 119. There used to be challenges such as numerous instances where the person providing notification was unfamiliar with the surrounding geographical area, especially for reports to 119 from cell phones. But starting from April 2007, a system went into operation in which the location information for the origin location is notified to each firefighting agency when a report to 119 is received from a cell or other type of phone (hereafter referred to as the "Location Information Notification System").

What is more, the FDMA has been considering integrating this Location Information Notification System together with the conventional New Origin Location Display System[*20] from landline phones in an effort to mitigate the financial burden on firefighting agencies throughout the county. Following a report by the Review Committee on Modalities for Integrating the New Origin Location Display System with the Location Information Notification System compiled in March 2009, the Integrated Location Information Notification System began operating in October 2009.

Through this, as of April 1, 2016 the number of fire defense headquarters that are now able to determine the location information when they receive 119 reports from cell and other types of phones is now 705 (of which 589 headquarters use the Integrated Location Information Notification System) as a result of the Location Information Notification System and Integrated Location Information Notification System.

### B. Fire Defense Communications Networks

Fire and emergency radios are an important piece of equipment. They are considered necessary for situations where a fire defense headquarters 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 defense headquarters, fire stations, and branch offices.

On the other hand, the image information recorded by the cameras equipped on fire protection 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 the Standards for Water Sources for Firefighting (FDMA Bulletin No. 7 from 1964) were revised to allow for their installation in a systematic manner (Table 2-1-3).

*19 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

*20 New Origin Location Display System: This is a system that notifies fire defense headquarters 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.

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.

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

(As of April 1 of each year)

| Category | 2015 | 2016 | Comparison | |
|---|---|---|---|---|
| | | | Difference | Percent change (%) |
| No. installed nationwide | 2,438,582 | 2,448,765 | 10,183 | 0.4 |
| | ( 100.0 ) | ( 100.0 ) | | |
| Fire hydrants | 1,885,707 | 1,916,386 | 30,679 | 1.6 |
| | ( 77.3 ) | ( 78.3 ) | | |
| Fire cisterns | 532,043 | 532,379 | 336 | 0.1 |
| | ( 21.8 ) | ( 21.7 ) | | |
| 20 $m^3$–less than 40 $m^3$ | 105,878 | 104,743 | −1,135 | −1.1 |
| 40 $m^3$–less than 60 $m^3$ | 382,009 | 382,410 | 401 | 0.1 |
| 60 $m^3$ or more | 44,156 | 45,226 | 1,070 | 2.4 |
| Wells | 20,832 | 20,662 | −170 | −0.8 |
| | ( 0.9 ) | ( 0.8 ) | | |

(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 %.

Section 4

# Education and Training Structures

## 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 defense headquarters, 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 defense headquarters 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 protection activities (see p. 159 of the 2016 White Paper on Fire Service).

## 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, 2016, 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 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 FY2015 a total of 33,419 firefighters attended education and training at fire academies (Table 2-4-1). As for volunteer firefighters, in FY2015 a total of 47,906 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 FY2015, education and training was provided to a total of 19,360 people, including personnel from local public bodies, local voluntary disaster prevention organizations, women's (female) firefighting clubs, and voluntary firefighting organizations at companies.

### (5) Teaching Faculty

As of April 1, 2016, of the 543 teaching faculty members at fire academies, 276 had been dispatched from fire defense headquarters. This is done in order to obtain teachers (who require expert knowledge and skills on things like firefighting activities and onsite inspections) from among the municipal firefighters who are directly engaged in firefighting activities (Table 2-4-3).

For the future, it will be necessary to foster and ensure teaching faculty for the fire academies from a medium- to long-term perspective through initiatives like training at the Fire and Disaster Management College, as well as exchanges with prefectural and other departments and municipal firefighting agencies.

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

(People)

| | FY2014 | FY2015 |
|---|---|---|
| Initial education | 6,500 | 6,411 |
| Specialized education | 10,875 | 10,343 |
| Fire Suppression Class | 910 | 979 |
| Special Disaster Class | 711 | 683 |
| Preventive Inspection Class | 1,038 | 921 |
| Hazardous Materials Class | 401 | 446 |
| Fire Inspection Class | 1,102 | 1,005 |
| Emergency Class | 4,821 | 4,617 |
| Rescue Class | 1,892 | 1,692 |
| Management education | 3,661 | 3,150 |
| Introductory Management Class | 2,267 | 1,903 |
| Intermediate Management Class | 907 | 898 |
| Advanced Management Class | 487 | 349 |
| Special education | 12,563 | 13,515 |
| Total | 33,599 | 33,419 |

(Source) Prepared based on the Survey on Education and Training at Fire Academies.

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

(People)

| | FY2014 | | | FY2015 | | |
|---|---|---|---|---|---|---|
| | School education | Teacher dispatch | Total | School education | Teacher dispatch | Total |
| Basic education | 4,263 | 7,962 | 12,225 | 3,859 | 7,682 | 11,541 |
| Specialized education | 2,516 | 4,134 | 6,650 | 2,264 | 0 | 2,264 |
| Fire Suppression Class | 1,050 | 2,996 | 4,046 | 1,033 | 0 | 1,033 |
| Machinery Operation Class | 1,466 | 1,138 | 2,604 | 1,231 | 0 | 1,231 |
| Management education | 6,542 | 112 | 6,654 | 8,172 | 438 | 8,610 |
| Introductory Management Class | 3,321 | 68 | 3,389 | 2,507 | 438 | 2,945 |
| Graduates of the Supervisory Management Class | 161 | 8 | 169 | 193 | 0 | 193 |
| Branch Supervisor Course | 1,667 | 0 | 1,667 | 2,631 | 0 | 2,631 |
| Local Command Course | 1,582 | 44 | 1,626 | 3,034 | 0 | 3,034 |
| Special education | 10,478 | 16,639 | 27,117 | 6,672 | 18,819 | 25,491 |
| Total | 23,799 | 28,847 | 52,646 | 20,967 | 26,939 | 47,906 |

(Source) Prepared based on the Survey on Education and Training at Fire Academies.

* Graduates of both the Local Command Course and the Branch Supervisor Course were counted as having completed the Supervisory Management Class.

* 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.

**Table 2-4-3 Number of teaching faculty at fire academies**

(As of April 1, 2016) (Unit: People)

| Principals, vice principals, or head teachers | | | Teachers | | | | | Administrative staff | | | Others | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Full-time | Part-time | Subtotal | Full-time | | Part-time | | Total | Full-time | Part-time | Total | Full-time | Part-time | Total | |
| | | | | Dispatch | | Dispatch | | | | | | | | |
| 92 | 13 | 105 | 508 | 264 | 35 | 12 | 543 | 96 | 11 | 107 | 196 | 1 | 197 | 952 |

(Source) 1 Prepared based on the Survey on Education and Training at Fire Academies.
2 Of the teachers, those labelled as "Dispatch" refer to teachers dispatched from fire defense headquarters to engage in their professional duties at a fire academy.
3 "Full-time" refers to teachers who engage in their professional duties at a fire academy on a full-time basis.
4 "Part-time" refers to teachers who are engaged in professional duties beyond those they have at a fire academy.

## 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 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 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 an indoor fire defense training building and an 11-story aboveground, multi-story training tower where trainees can run drills in an environment where there is thick smoke and hot air through the combined use of steam and smoke machines. In addition, these also include a training facility where trainees can experience a real fire in which they experience the same changes in the environment that occur at the scene of an actual fire in which wood is burning inside a container.

The dormitory has a south wing that can accommodate 172 people and a north wing that can accommodate 52. In addition, in FY2015 it was outfitted with a dedicated facility for women (the Sakura Club), 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 1,048 graduates from its comprehensive classes and specialized classes, and 577 graduates from its practical courses. This brings the total number of its graduates from the time it was founded up through FY2015 to 57,501.

What is more, its employees numbered 1,910 people in FY2016 (Table 2-4-4).

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 FY2015 20 classes and 10 practical courses were held throughout the year.

Exterior of the Sakura Club, a dedicated facility for women

NBC disaster response drill

Drill for handling mass casualties held as part of several classes

Drill for experiencing an actual fire (hazardous substances fire)

**Table 2-4-4 Education and training implementation status**

| Category | | | FY2015 (actual performance) | | FY2016 (planned) | | | |
|---|---|---|---|---|---|---|---|---|
| | | | No. of times held (times) | Graduates (people) | No. of times held (times) | Capacity (people) | Time | Educational goals |
| Classes | Comprehensive education | Management Class | 4 | 279 | 4 | 306 | 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 | 43 | 1 | 54 | 3 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 | 48 | 2 | 120 | 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 | 51 | 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 | 120 | 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 | 42 | 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 | 96 | 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 | 36 | 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 | 105 | 1 | 96 | 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. |
| | Subtotal | | 20 | 1,048 | 20 | 1,158 | | |
| Practical courses | Emergency Fire Response Team classes | Commanding Officer Course | 2 | 62 | 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 | 66 | 1 | 66 | 2 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 | 55 | 1 | 84 | 2 weeks | To have firefighting and fire defense air patrol commanders learn the knowledge and skills they will need for their work. |
| | Crisis management/firefighting education classes | Crisis Management/Public Protection Course | 1 | 76 | 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 | 68 | 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 | 124 | 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 | 60 | 1 | 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. |
| | Course for Promoting the Active Involvement of Female Firefighting Officials | | – | – | 1 | 48 | 1 week | 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. |
| | Subtotal | | 10 | 577 | 11 | 752 | | |
| Total | | | 30 | 1,625 | 31 | 1,910 | | |

Regarding the contents of the education and training for each course (lesson subjects), 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 receiving commands during a fire, simulation training for receiving assistance during a large-scale 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 fir e 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.

In FY2015, practical courses aimed at those people involved in education and training for volunteer fire corps was newly established at prefectural and other fire academies and fire defense headquarters to contribute to promoting and enhancing education and training for volunteer fire corps. In addition to this, in recent years short training courses have been offered for voluntary disaster prevention organizations aimed at the personnel in charge of education for said organizations. This has been done based on the fact that disasters resulting from localized heavy downpours, heavy snows, typhoons, and others have been occurring frequently in different regions.

What is more, the FDMA established the Review Committee on Education and Training at the Fire and Disaster Management College with respect to establishing even more advanced education and training at the college moving forward. This is designed to reassess future modalities for management education, as well as education and training for responding to imminent large-scale disasters and the like in light of the convergence last year of a mass retirement of firefighters and a trend in which others are advancing onto management positions. It is also aimed at improving capabilities for deploying the Emergency Fire Response Teams given the revisions related to the reorganizations of said teams.

In FY2016, a five-day practical course was newly established as a course exclusively for women. Its primary objective is to provide support for career development for female firefighting officials in an effort to expand training opportunities for women. In addition, a framework was established in which 5% of the trainees enrolled in each course much be female firefighting officials, thereby giving priority to the matriculation of women.

Furthermore, for the holding of large-scale international events (such as the 2020 Tokyo Olympic and Paralympic Games), the FDMA will increase the number of days of education for its NBC Course from 10 to 15 in an effort to enhance NBC disaster response capabilities by FY2020, when the Olympics are to be held.

### (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

The education and training at the Fire and Disaster Management College includes orientation education for fire academy principals as part of classes for newly-appointed fire chiefs and principals, as well as orientation education for fire academy teachers as part of classes for newly-appointed teachers.

The classes for newly-appointed 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 other classes for specialized education beyond those for newly-appointed 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, emergency medical 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 117 times in FY2015.

#### C. Editing Firefighting Textbooks

The FDMA edits the textbooks for beginners that are used at the fire academies. As of April 2016, 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

With a view to the hosting of the Rugby World Cup 2019, special lectures are being planned for 12 locations in prefectures where the venues will be located over the next three years. In FY2016, lectures on topics like safety management, responding to mass casualties, and NBC responses were held at four locations in Iwate Prefecture, Shizuoka Prefecture, Kumamoto Prefecture, and Kanagawa Prefecture.

## 5. Other Education and Training

### (1) Fostering Emergency Medical Technicians (EMTs)

When it comes to education and training for fostering EMTs, the Foundation for Ambulance Service Development has established the Emergency Life-Saving Technique Academy of Tokyo (with a capacity of 600 people a year) and the Emergency Life-Saving Technique Academy of Kyushu (with a capacity of 200 people a year) to serve as training centers where rescue workers can sit for the national exam for EMTs and become qualified as such.

What is more, EMT training facilities have also been established by firefighting agencies in big cities. As of FY2015, a combined total of approximately 1,180 firefighters had received education to become qualified as EMTs, and had sat for the national exam.

These EMT training facilities provide education based on the Designated Rules for EMT Schools and Training Facilities (Ordinance No. 2 by the Ministry of Education, Culture, Sports, Science and Technology and the Ministry of Health and Welfare of 1991).

### (2) Fostering Lead EMTs

Now that more than 20 years have passed since the enactment of the Emergency Life-Saving Technician's Act, efforts have been made to develop human resources to provide leadership to other EMTs. Against this backdrop, EMTs with a wealth of experience provide education related to onsite activities carried out in environments that differ from those within a hospital, such as the scenes of emergencies. The thinking is that this has led to improving the quality of emergency services and ensuring the trust of the public in them, while also contributing to lessening the educational burden on fire defense headquarters and medical institutions. Therefore, the roles that EMTs in a leadership position (lead EMTs) are being asked to play are growing.

At the Review Committee on Modalities for Emergency Services hosted by the FDMA in FY2013, the requirements on lead EMTs and the educational curriculum needed in order to foster them were discussed. Owing to this, the education needed in order to receive accreditation as a lead EMT began being offered by the Emergency Life-Saving Technique Academy of Kyushu in May 2014, and through the Emergency Course at the FDMA's Fire and Disaster Management College starting from September 2014.

In addition, the FDMA prepared the Textbook for Fostering Lead EMTs in November 2015. This serves as a uniform nationwide standard for developing curriculum with more specific educational content with a view towards further promoting the fostering of lead EMTs and their application nationwide.

Section 5

# Emergency Medical Service Structures

## 1. Implementation of Emergency Medical Services

### (1) Emergency Medical Service Mobilization

The number of times emergency medical service mobilizations were sent out via ambulances nationwide in 2015 came to 6,054,815 (an increase of 69,894, or 1.2%, 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 emergency medical service mobilizations were sent out taken as a daily average is approximately 16,589 (this was 16,397 in the previous year), meaning that emergency medical service teams were mobilized at a rate of once every 5.2 seconds or so (this was 5.3 seconds the previous year).

What is more, the number of people transported by ambulance has also consistently continued its upward swing, coming to 5,478,370 people (an increase of 72,453 people, or 1.3%, from the previous year). This means that one out of every 23 members of the public has been transported by an emergency medical service team (this was one out of every 24 people in the previous year). Looking at this by the type of accident that led people to be transported by an ambulance reveals that 3,491,374 people (63.7%) suddenly took ill, 817,931 people (14.9%) suffered an ordinary injury, 490,797 people suffered a car accident (9.0%), and so on (Table 2-5-1, Table 2-5-2, Attached Documents 40 and 41 of the 2016 White Paper on Fire Service).

The number of times fire protection helicopters were mobilized came to 3,375 (this was 3,456 the previous year), and 2,882 people were transported by them (2,718 the previous year).

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

Of the 5,478,370 people transported by ambulances in 2015, the percentage of sick or injured people who died or suffered severe or moderate injuries or illnesses came to 50.4% of the total. The share of people with minor injuries or illnesses that did not require hospitalization or other cases (cases where a doctor did not provide a diagnosis, etc.) came to 49.6% (Table 2-5-3).

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

Viewing a breakdown of the 5,478,370 people transported by ambulance in 2015 by age group reveals that 13,054 of them were newborn infants (0.2%), 253,818 were young children (4.6%), 197,552 were youths (3.6%), 1,909,578 were adults (34.9%), and 3,104,368 were elderly people (56.7%). As the aging of society advances, the share accounted for by elderly people will continue to trend upwards year by year (this was 55.5% the previous year).

What is more, elderly people accounted for a large percentage of the people transported by ambulance for sudden illnesses (2,106,867 people, or 60.3%), while there was a large percentage of adults transported for traffic accidents (309,253 people, or 63.0%) and elderly people for ordinary injuries (527,533 people, or 64.5%) (Table 2-5-4, Fig. 2-5-1).

### (4) People Transported for Sudden Illnesses by Type of Illness

The number of people transported by ambulance due to sudden illnesses in 2015 came to 3,491,374 people. Looking at a breakdown of this by the categories found in the International Classification of Diseases (ICD-10) by the World Health Organization (WHO) reveals that 281,703 people were transported for brain diseases (8.1%), 302,081 people were transported for heart and other diseases (8.6%), 341,483 people were transported for digestive system issues (9.8%), and 326,964 people were transported for respiratory system issues (9.4%) (Fig. 2-5-2).

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

Looking at a breakdown of the 6,054,815 cases in which ambulances were mobilized in 2015 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 (3,787,142 cases, or 62.5% of the total) (Fig. 2-5-3).

Moreover, the average time required to arrive at the scene came to 8.6 minutes (the same as the previous year), which is 2.1 minutes longer than it was ten years ago (2005) (Fig. 2-5-5).

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

Looking at a breakdown of the 5,478,370 people transported by ambulance in 2015 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 (3,349,560 people, or 61.2%). This was followed by those checked in between 20 and 30 minutes (1,398,607 people, or 25.5%) (Fig. 2-5-4).

In addition, the average time required to check the patient into a hospital came to 39.4 minutes (the same as the previous year), which is 8.3 minutes longer than it was ten years ago (2005) (Fig. 2-5-5).

## Table 2-5-1 Trends in the number of times emergency medical service mobilizations were sent out and the people transported

(During each year)

| Category / Year | No. of emergency medical service mobilizations | | | | People transported | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total No. of emergency medical service mobilizations | Of which, No. via ambulance (A) | Of which, No. via fire protection helicopter | Difference/rate of change (%) from previous year | Total No. of people transported | Of which, No. via ambulance | Of which, No. via fire protection helicopter | Difference/rate of change (%) from previous year | Of (A), No. of mobilizations due to sudden illnesses (B) | Ratio of (B) to (A) (%) |
| 2002 | 4,557,949 | 4,555,881 | 2,068 | 158,754 (3.6) | 4,331,917 | 4,329,935 | 1,982 | 139,447 (3.3) | 2,610,812 | 57.3 |
| 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 |

(Notes) 1 Prepared based on the Survey on Emergency Service Implementation Status and the Survey of the Current Status of Fire Prevention and Earthquake Countermeasures.

2. Due to the effects of the Great East Japan Earthquake, the figures were totaled by excluding data from the fire defense headquarters at the Otsuchi District Administrative Affairs Association in Kamaishi and the fire defense headquarters in Rikuzentakata City from 2011.

## Table 2-5-2 Number of mobilizations and people transported by ambulance by type of accidents

(During each year)

| By type of accident | During 2014 | | During 2015 | | YoY | |
|---|---|---|---|---|---|---|
| | No. of mobilizations (People transported) | Composition rate (%) | No. of mobilizations (People transported) | Composition rate (%) | Difference | Rate of change (%) |
| Sudden illness | 3,781,249<br>(3,419,932) | 63.2<br>(63.3) | 3,851,978<br>(3,491,374) | 63.6<br>(63.7) | 70,729<br>71,442 | 1.9<br>2.1 |
| Traffic accident | 518,372<br>(508,013) | 8.7<br>(9.4) | 501,321<br>(490,797) | 8.3<br>(9.0) | −17,051<br>−17,216 | −3.3<br>−3.4 |
| Ordinary injury | 884,923<br>(808,072) | 14.8<br>(14.9) | 894,742<br>(817,931) | 14.8<br>(14.9) | 9,819<br>9,859 | 1.1<br>1.2 |
| Self-inflicted injury | 60,136<br>(40,742) | 1.0<br>(0.8) | 56,891<br>(38,425) | 0.9<br>(0.7) | −3,245<br>−2,317 | −5.4<br>−5.7 |
| Work-related injury | 51,694<br>(50,461) | 0.9<br>(0.9) | 50,788<br>(49,589) | 0.8<br>(0.9) | −906<br>−872 | −1.8<br>−1.7 |
| Assault | 37,736<br>(29,768) | 0.6<br>(0.6) | 35,879<br>(28,116) | 0.6<br>(0.5) | −1,857<br>−1,652 | −4.9<br>−5.5 |
| Sports/athletics | 38,501<br>(38,231) | 0.6<br>(0.7) | 40,588<br>(40,307) | 0.7<br>(0.7) | 2,087<br>2,076 | 5.4<br>5.4 |
| Fire | 23,676<br>(5,869) | 0.4<br>(0.1) | 22,318<br>(5,600) | 0.4<br>(0.1) | −1,358<br>−269 | −5.7<br>−4.6 |
| Flood | 5,085<br>(2,451) | 0.1<br>(0.0) | 5,329<br>(2,327) | 0.1<br>(0.1) | 244<br>−124 | 4.8<br>−5.1 |
| Natural disaster | 698<br>(503) | 0.0<br>(0.0) | 493<br>(336) | 0.0<br>(0.0) | −205<br>−167 | −29.4<br>−33.2 |
| Other | 582,851<br>(501,875) | 9.7<br>(9.3) | 594,488<br>(513,568) | 9.8<br>(9.4) | 11,637<br>11,693 | 2.0<br>2.3 |
| Total | 5,984,921<br>(5,405,917) | 100.0<br>100.0 | 6,054,815<br>(5,478,370) | 100<br>100 | 69,894<br>72,453 | 1.2<br>1.3 |

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

## Table 2-5-3 People transported by ambulance by type of accident and severity of illness or injury

(During 2015)

| Category / Type of incident | Death | Serious illness/injury | Moderate illness/injury | Minor illness/injury | Other | Total |
|---|---|---|---|---|---|---|
| Sudden illness | 60,387 (1.7) | 272,596 (7.8) | 1,451,216 (41.6) | 1,701,544 (48.7) | 5,631 (0.2) | 3,491,374 (100.0) |
| Traffic accident | 2,198 (0.5) | 18,830 (3.8) | 92,103 (18.8) | 375,976 (76.6) | 1,690 (0.3) | 490,797 (100.0) |
| Ordinary injury | 5,609 (0.6) | 54,530 (6.7) | 267,882 (32.8) | 488,212 (59.7) | 1,698 (0.2) | 817,931 (100.0) |
| Other | 8,061 (1.2) | 119,501 (17.6) | 408,828 (60.3) | 140,242 (20.7) | 1,636 (0.2) | 678,268 (100.0) |
| Total | 76,255 (1.4) | 465,457 (8.5) | 2,220,029 (40.5) | 2,705,974 (49.4) | 10,655 (0.2) | 5,478,370 (100.0) |

(Notes) 1 Prepared based on the Survey on Emergency Service Implementation Status.
2 "Death" refers to cases where the person was confirmed dead at the time of the diagnosis.
3 "Serious illness/injury" refers to cases involving injuries or illnesses of a severity that requires three weeks of hospitalization or greater.
4 "Moderate illness/injury" refers to cases other than those where the severity of the injury or illness is not classified as "serious" or "minor."
5 "Minor illness/injury" refers to cases where the severity of the injury or illness does not require hospitalization.
6. "Other" refers to cases where a doctor did not offer a diagnosis, etc.
7. The numbers in parenthesis show the composition ratio, and their unit is %.

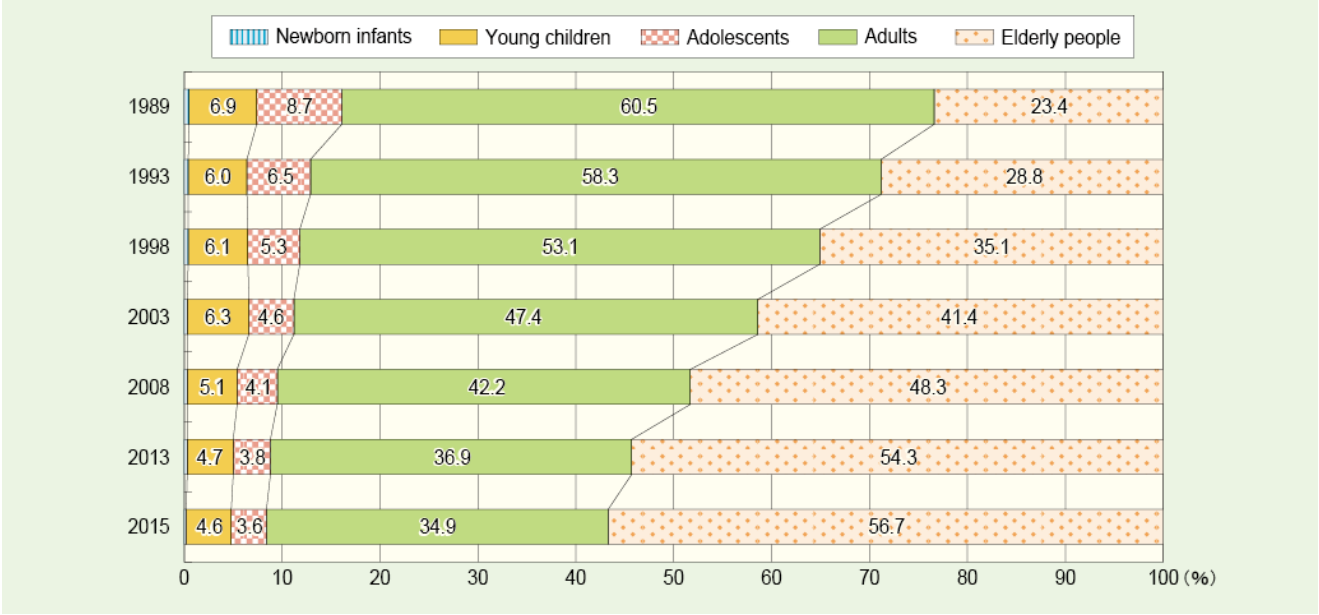
## Table 2-5-4 People transported by ambulance by age group and type of incident

(During 2015)

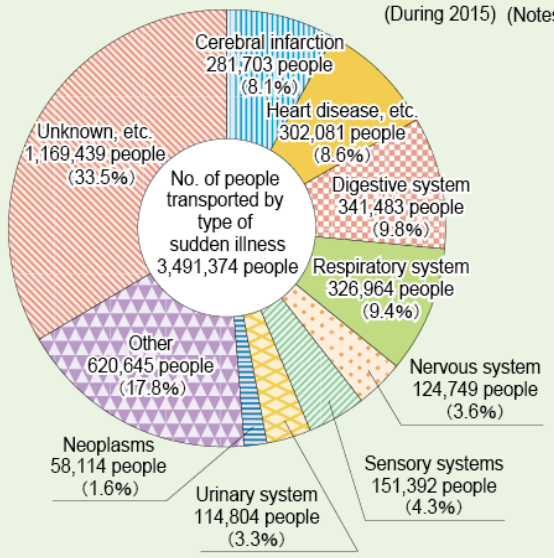
| Type of incident / Age groups | Sudden illness | Traffic accident | Ordinary injury | Other (not listed at left) | Total* | (Reference) FY2015 census population (composition rate) |
|---|---|---|---|---|---|---|
| Newborn infants (composition rate: %) | 1,829 (0.1) | 59 (0.0) | 302 (0.0) | 10,864 (1.6) | 13,054 (0.2) | 7,086,411 (5.6) |
| Young children (composition rate: %) | 154,456 (4.4) | 15,852 (3.2) | 66,317 (8.1) | 17,193 (2.5) | 253,818 (4.6) | |
| Youths (composition rate: %) | 81,881 (2.4) | 47,627 (9.7) | 32,772 (4.0) | 35,272 (5.2) | 197,552 (3.6) | 12,407,682 (9.9) |
| Adults (composition rate: %) | 1,146,341 (32.8) | 309,253 (63.0) | 191,007 (23.4) | 262,977 (38.8) | 1,909,578 (34.9) | 72,681,453 (57.9) |
| Elderly people (composition rate: %) | 2,106,867 (60.3) | 118,006 (24.1) | 527,533 (64.5) | 351,962 (51.9) | 3,104,368 (56.7) | 33,465,441 (26.6) |
| Total (composition rate: %) | 3,491,374 (100.0) | 490,797 (100.0) | 817,931 (100.0) | 678,268 (100.0) | 5,478,370 (100.0) | 125,640,987 (100.0) |

(Notes) 1 Prepared based on the Survey on Emergency Service Implementation Status.
2. The age groups are as follows.
(1) Newborn infants: Less than 28 days old
(2) Young children: Between 28 days and 7 years old
(3) Adolescents: Between 7 and 18 years old
(4) Adults: Between 18 and 65 years old
(5) Elderly people: 65 and older
3 The 2015 census population does not include 1,453,758 people of indeterminate age.

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



## Fig. 2-5-2 No. of people transported due to sudden illness by type of illness2




(Notes)

1 The classifications for illnesses pertaining to sudden illnesses were classified using the names of illnesses based on doctor's diagnoses at the initial medical examination for conditions relating to sudden illnesses based on the International Classification of Diseases (ICD-10) established by the World Health Organization (WHO).

2 "Cerebral infarction" refers to "a-0904. Cerebral infarction" and "a-0905. Other encephalopathy" found in "IX. Diseases of the circulatory system."

3 "Heart disease, etc." refers to everything from "a-0901. Hypertensive disease" through "a-0903. Other heart diseases" up through "a-0906. Other diseases of the circulatory system" in "IX. Diseases of the circulatory system."

4 "Digestive system" refers to "XI. Diseases of the digestive system."

5 "Respiratory system" refers to "X. Diseases of the respiratory system."

6 "Nervous system" refers to "V. Mental, behavioral and neurodevelopmental disorders."

7 "Sensory system" refers to "VI. Diseases of the nervous system," "VII. Disease of the eye and adnexa," and "VIII. Diseases of the ear and mastoid process."

8 "Urinary system" refers to "XIV. Diseases of the genitourinary system."

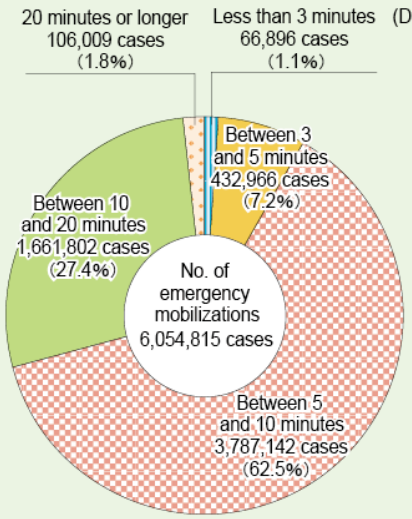
9 "Neoplasms" refer to "II. Neoplasms."

10 "Conditions with unknown symptoms, signs, and diagnoses" refer to "XVIII. Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified."

11 "Other" refers to diseases that can be categorized under I, III, IV, XII, XIII, XV, XVI, XVII, XIX, XX, and XXI, which are broad groupings other than those listed above.

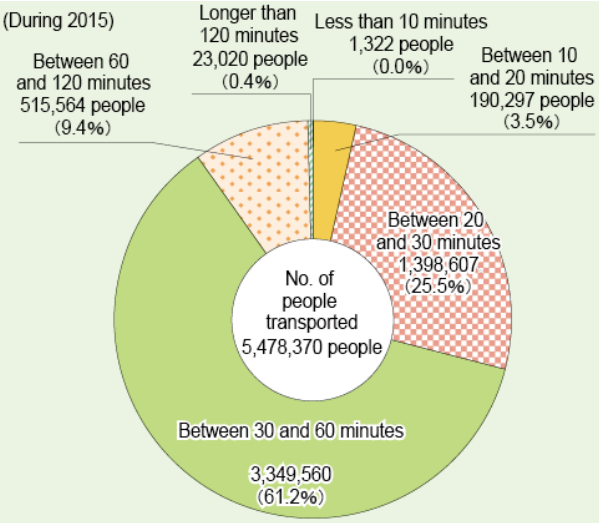
12 In every case where there was a suspected diagnosis, these were classified using the disease names.

## Fig. 2-5-3 No. of mobilizations by time required for the ambulance to arrive at the scene



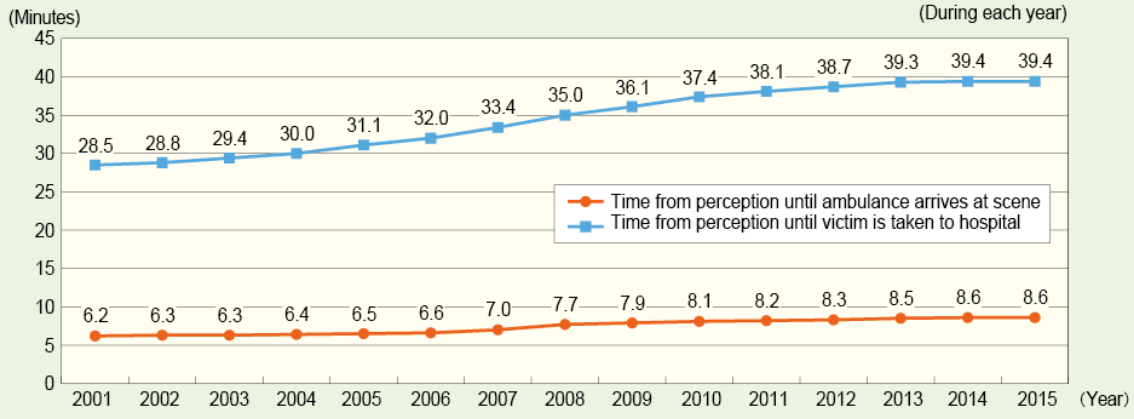

(Note) Prepared based on the Survey on Emergency Service Implementation Status.

## Fig. 2-5-4 No. of people transported by ambulance by time it took to check them into a hospital




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

## Fig. 2-5-5 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 fire defense headquarters at the Otsuchi District Administrative Affairs Association in Kamaishi and the fire defense headquarters in Rikuzentakata City from 2011.

## Table 2-5-5 First-aid treatment administered by ambulance crew members

| Type of incident | | Sudden illness | Traffic accident | Ordinary injury | Other | Total |
|---|---|---|---|---|---|---|
| No. of people transported who were given first-aid treatment | | 3,433,763 | 476,098 | 795,637 | 661,241 | 5,366,739 |
| Items for which first-aid treatment were administered | Stanching bleeding | 20,188 (0.1) | 23,631 (1.3) | 74,318 (2.6) | 17,289 (0.7) | 135,426 (0.7) |
| | Covering | 23,526 (0.2) | 88,174 (4.8) | 182,242 (6.4) | 38,482 (1.6) | 332,424 (1.6) |
| | Immobilization | 39,315 (0.3) | 233,531 (12.8) | 159,952 (5.6) | 49,729 (2.0) | 482,527 (2.4) |
| | Keeping warm | 1,023,900 (7.8) | 91,639 (5.0) | 203,660 (7.1) | 177,568 (7.3) | 1,496,767 (7.4) |
| | Oxygen inhalation | 795,026 (6.1) | 42,090 (2.3) | 57,902 (2.0) | 196,170 (8.0) | 1,091,188 (5.4) |
| | Artificial respiration | 29,600 (0.2) | 905 (0.1) | 3,254 (0.1) | 4,847 (0.2) | 38,606 (0.2) |
| | Pressure on sternum | 8,089 (0.1) | 307 (0.0) | 1,017 (0.0) | 997 (0.0) | 10,410 (0.1) |
| | *Of which, cases involving automatic heart massagers | 2,061 | 50 | 279 | 228 | 2,618 |
| | Cardiopulmonary resuscitation | 96,440 (0.7) | 3,174 (0.2) | 11,281 (0.4) | 11,880 (0.5) | 122,775 (0.6) |
| | *Of which, cases involving automatic heart massagers | 8,397 | 241 | 1,066 | 1,033 | 10,737 |
| | *Continuation of home medical treatment | 27,524 (0.2) | 181 (0.0) | 2,219 (0.1) | 2,786 (0.1) | 32,710 (0.2) |
| | *Antishock garments | 142 (0.0) | 16 (0.0) | 41 (0.0) | 34 (0.0) | 233 (0.0) |
| | *Measuring blood pressure | 3,133,146 (23.9) | 453,296 (24.8) | 725,282 (25.3) | 598,648 (24.5) | 4,910,372 (24.2) |
| | *Listening for heartbeat/sounds of breathing | 986,811 (7.5) | 133,175 (7.3) | 141,548 (4.9) | 131,275 (5.4) | 1,392,809 (6.9) |
| | *Measuring blood oxygenation levels | 3,235,227 (24.7) | 460,989 (25.3) | 757,716 (26.5) | 628,645 (25.7) | 5,082,577 (25.1) |
| | *ECG measurements | 1,924,611 (14.7) | 108,179 (5.9) | 209,516 (7.3) | 288,296 (11.8) | 2,530,602 (12.5) |
| | Ensuring respiratory tracts | 161,753 (1.2) | 5,269 (0.3) | 17,443 (0.6) | 20,831 (0.9) | 205,296 (1.0) |
| | *Of which, nasal airways | 8,949 | 151 | 847 | 1,235 | 11,182 |
| | *Of which, laryngoscope, forceps, etc. | 5,798 | 126 | 3,381 | 427 | 9,732 |
| | *Of which, laryngeal mask, etc. | 34,311 | 848 | 3,215 | 2,938 | 41,312 |
| | *Of which, tracheal intubation | 6,759 | 131 | 2,219 | 799 | 9,908 |
| | *Defibrillation | 11,455 (0.1) | 198 (0.0) | 573 (0.0) | 732 (0.0) | 12,958 (0.1) |
| | *Ensuring intravenous lines | 39,874 (0.3) | 1,242 (0.1) | 4,435 (0.2) | 3,715 (0.2) | 49,266 (0.2) |
| | *Of which, cases before CPA | 7,241 | 442 | 410 | 402 | 8,495 |
| | *Of which, cases after CPA | 28,474 | 664 | 3,430 | 2,869 | 35,437 |
| | *Drug administration | 17,858 (0.1) | 458 (0.0) | 2,255 (0.1) | 1,641 (0.1) | 22,212 (0.1) |
| | *Measuring blood sugar | 20,603 (0.2) | 205 (0.0) | 588 (0.0) | 436 (0.0) | 21,832 (0.1) |
| | *Administration of grape sugar | 3,503 (0.0) | 22 (0.0) | 32 (0.0) | 35 (0.0) | 3,592 (0.0) |
| | *EpiPen administration | 212 (0.0) | 14 (0.0) | 45 (0.0) | 30 (0.0) | 301 (0.0) |
| | Other treatments | 1,516,503 (11.6) | 177,889 (9.8) | 309,476 (10.8) | 267,383 (11.0) | 2,271,251 (11.2) |
| Total | | 13,115,306 (100.0) | 1,824,584 (100.0) | 2,864,795 (100.0) | 2,441,449 (100.0) | 20,246,134 (100.0) |
| Expanded first-aid treatments, etc. | | 9,467,241 | 1,159,522 | 1,855,257 | 1,662,933 | 14,144,953 |

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

### (7) First-aid Treatment Administered by Ambulance Crew Members

Of the 5,478,370 people transported by ambulances in 2015, ambulance crew members administered first-aid treatment to 5,366,739 patients (98.0%). This brings the total number of cases in which ambulance crew members administered first-aid treatment to 20,246,134.

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 2-5-5) came to 14,144,953 (a 3.2% 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[*21] (including cases administered by non-EMT ambulance crews), ensuring respiratory tracts using laryngeal masks, etc.,[*22] tracheal intubation, defibrillation, ensuring intravenous channels,[*23] drug administration,[*24] EpiPen administration,[*25] measuring blood sugar,[*26] and administration of grape sugar[*27]) came to 161,381 (135,668 the previous year), which is a roughly 19% increase year on year.

## 2. Implementation Structure for Emergency Medical Services

### (1) Number of Municipalities Offering Emergency Medical Services

The number of municipalities offering emergency medical services as of April 1, 2016 came to 1,690 municipalities (791 cities, 738 towns, and 161 villages) (the special wards of Tokyo were counted as one city; the same hereafter).

Emergency medical 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 emergency medical services can be received in virtually every region (Table 2-5-6, Attached Document 42 of the 2016 White Paper on Fire Service).

When viewed by the configuration through which said emergency medical services were offered, 443 municipalities offered them independently, 139 did so by outsourcing them, and 1,108 did so through special district authorities and extended associations (Fig. 2-5-6).

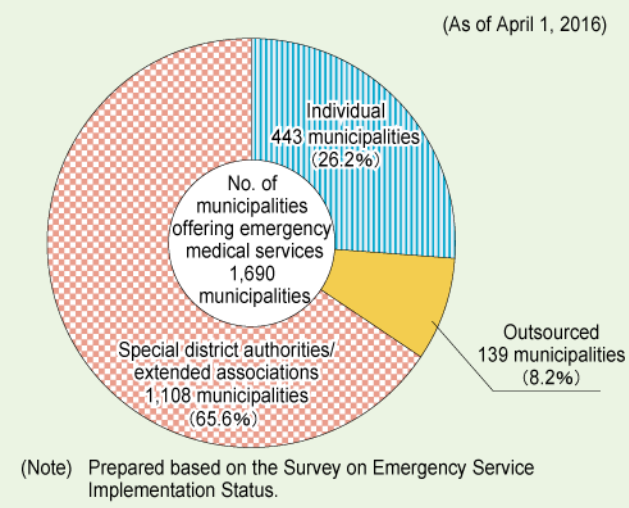
### (2) Number of Emergency Medical Crews and Emergency Medical Crew Members

As of April 1, 2016, 5,090 emergency medical crews (an increase of 21 YoY) had been established (Fig. 2-5-7).

Since emergency medical crew members are engaged in the important duty of saving people's lives, they must complete at least 135 hours' worth of training courses on emergency medical services (the former Emergency Medical I Course). As of April 1, 2016, the number of firefighters who fulfilled this eligibility requirement came to 121,577 (an increase of 3,621 YoY). Of these, 61,053 were engaged in emergency medical services as emergency medical crew members (including not only full-time emergency medical crew members, but also emergency medical crew members who have been appointed as such and who concurrently serve on firefighting vehicles such as pump vehicles by riding along with them) (Fig. 2-5-8).

What is more, of the firefighters who fulfilled the eligibility requirements to be emergency medical crew members, the number who had completed 250 hours' worth of emergency medical courses to enable them to provide even more advanced first-aid treatment (including the former Emergency Medical Standard Course and former Emergency Medical II Course) came to 81,991 people (an increase of 2,718 YoY) nationwide. Of these, 34,101 are engaged in emergency medical services as emergency medical crew members.

**Fig. 2-5-6** **Breakdown of the configurations by which emergency medical services are offered**




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

*21 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.

*22 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.。

*23 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.

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

*25 EpiPen administration: In cases where sick or injured patients whose lives are at risk from anaphylactic shock have been prescribed self-injectable adrenaline formulations (EpiPen) in advance, EMTs will administer said adrenaline formulations (EpiPen).。

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

*27 Administration of grape sugar: This refers to the administration of grape sugar under the specific instructions of a doctor.

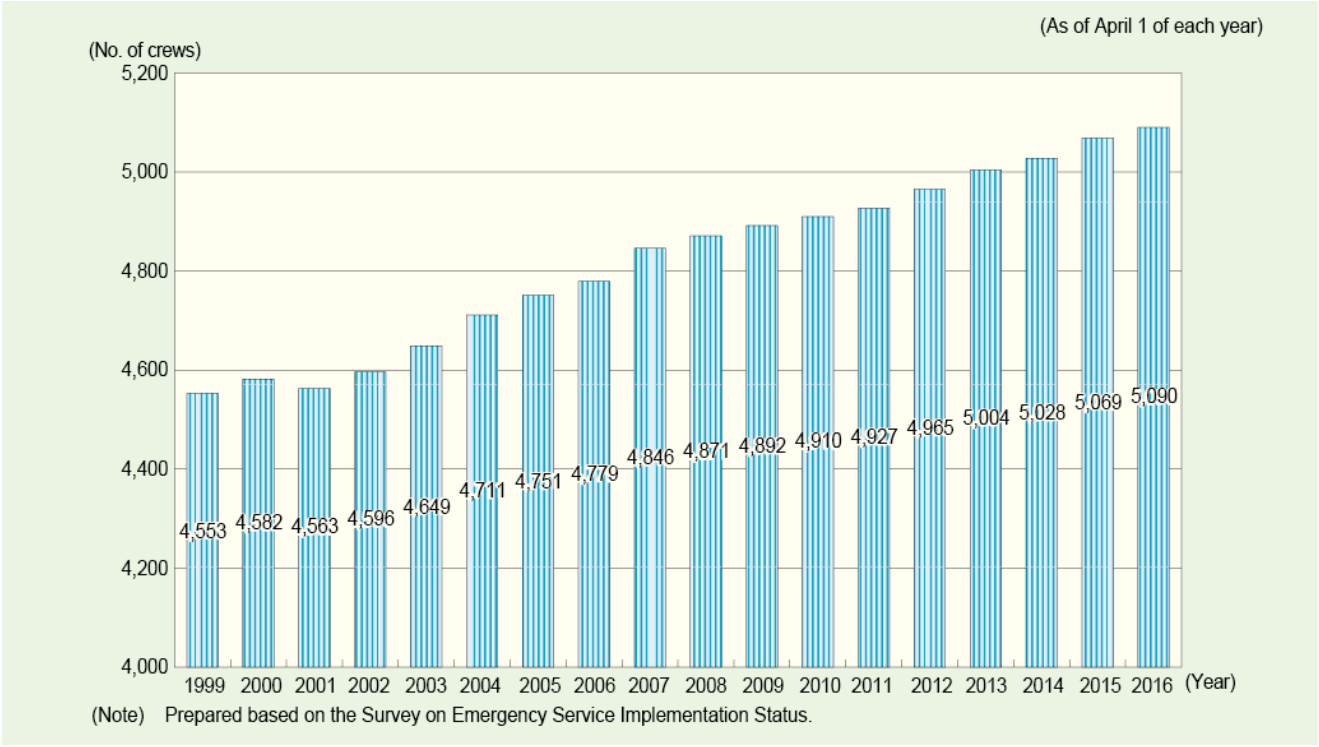
## Table 2-5-6 Trends in the number of municipalities offering emergency medical services

（毎年４月１日現在）

| Category / Group | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of municipalities | 3,162 | 3,136 | 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 |
| Municipal implementation rate (%) | 98.2 | 98.3 | 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 |
| 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 |

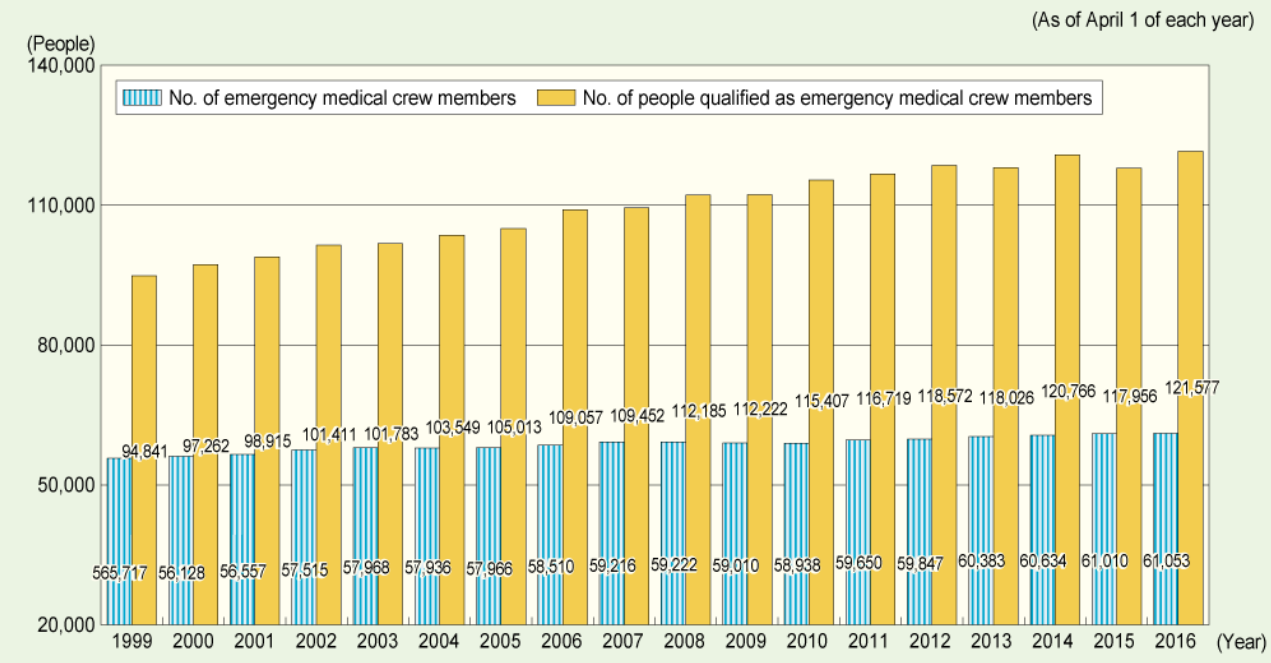
(Note) Prepared based on the Survey on Emergency Medical Service Implementation Status.

## Fig. 2-5-7 Trends in the number of emergency medical crews




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

## Fig. 2-5-8 Trends in the number of emergency medical crew members




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

### (3) Trends in the Number of EMTs and Medical Crews with EMTs

As a result of the increasing sophistication of emergency 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 emergency medical crew.

The number of fire defense headquarters making use of EMTs as of April 1, 2016 came to 732 of the total of 733 fire defense headquarters throughout Japan, for a usage rate of 99.9% (same as the previous year). The number of emergency medical crews with EMTs came to 5,008 (an increase of 49 YoY), which corresponds to 98.4% of the 5,090 emergency medical crews throughout Japan (97.8% the previous year), with this rising year by year. What is more, there were 34,223 firefighters with EMT qualifications (an increase of 1,410 people YoY). Of these, 24,973 had been put to use as EMTs (an increase of 750 people YoY), with this number steadily increasing year by year (Fig. 2-5-9, Fig. 2-5-10).

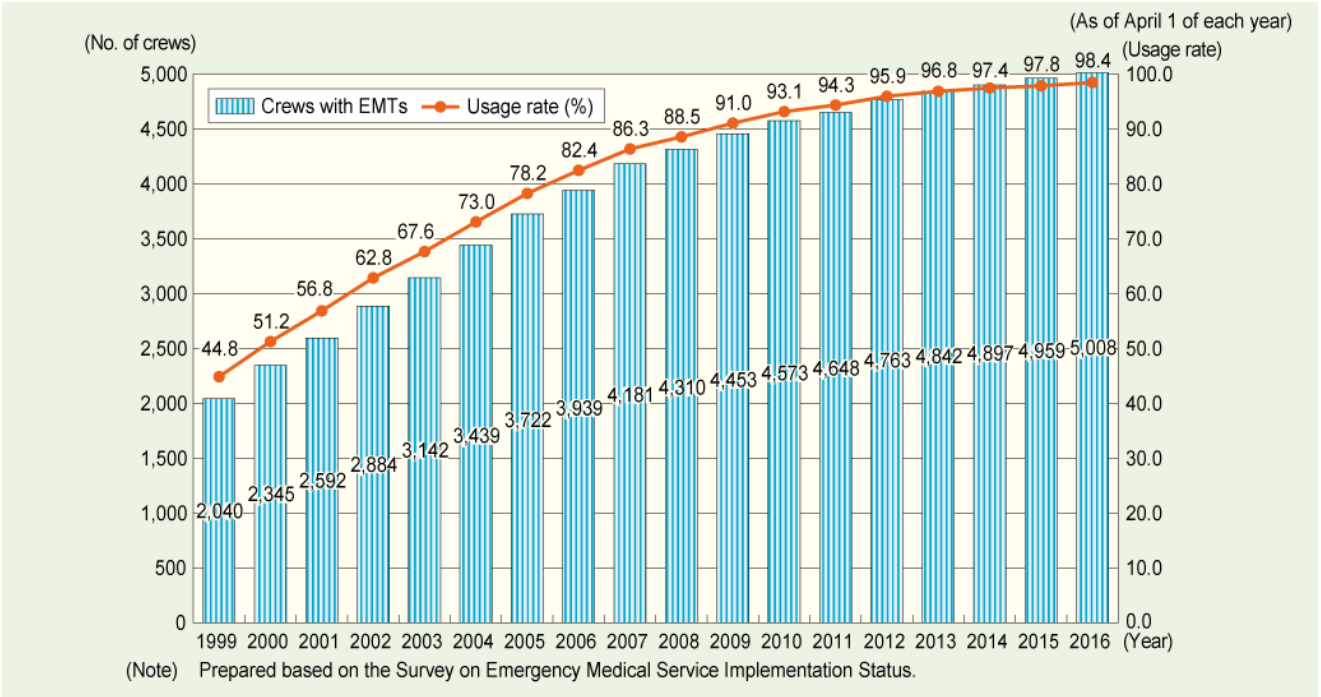
### (4) Number of Ambulances

The number of ambulances owned by fire defense headquarters throughout Japan as of April 1, 2016 came to 6,210 (an increase of 26 YoY), including those for emergency use. Of these, the number of high-standard ambulances came to 5,877 (an increase of 108 YoY), which corresponds to 95% of the total.

### (5) Emergency Medical Services along National and Other Expressways

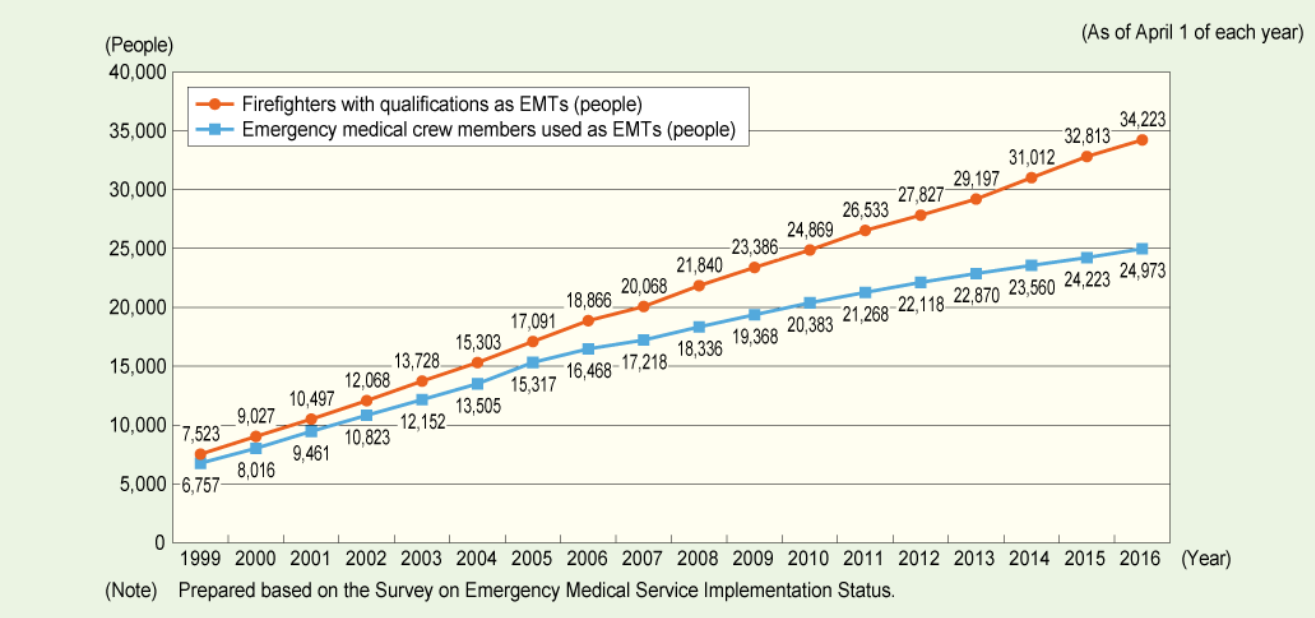
When it comes to emergency medical services along national expressways, the Seto-Chuo Expressway, and the Kobe-Awaji-Naruto Expressway (hereafter referred to as “national and other expressways”), the East Nippon Expressway Company, Central Nippon Expressway Company, West Nippon Expressway Company, and Honshu-Shikoku Bridge Expressway Company (hereafter referred to as “expressway companies”) are responsible for road management operations and offering centralized, independent emergency medical services. Moreover, the municipalities along said expressways are responsible for handling emergency medical services as per the provisions of the Fire Service Law. So it has been stipulated that both parties are to work together to properly and efficiently safeguard human life. As of April 1, 2016, emergency medical services along national and other expressways were provided by municipal firefighting agencies over every section of the 8,369 km 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 emergency medical services.

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




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

**Fig. 2-5-10 Trends in the number of EMTs8**




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

## 3. Promoting Coordination between Firefighting and Medical Care

### (1) Acceptance of People Receiving Emergency Transport at Medical Institutions [*28]

Reports were received on cases in which problems arose in choosing medical institutions to receive patients during emergency 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 emergency 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.

For the Survey on the Actual Acceptance Status at Medical Institutions for Emergency Transport in 2015, reductions were seen for every category regarding the number of cases in which four or more acceptance inquiries were made compared with the same survey in 2014. In terms of percentages, only that for cases in which young patients were transported held steady, while all the others decreased (Table 2-5-7). The number of cases where the time spent at the scene was 30 minutes or longer rose for both cases in which young patients were transported and where patients were transported to critical care centers. Yet conversely, this fell for cases where patients with severe conditions or worse and pregnant or perinatal patients were transported. In terms of percentages, these fell for the cases in which patients with severe conditions or worse were transported, and held steady in cases where patients were transported to critical care centers. The percentages of cases in which pregnant or perinatal patients and young patients were transported both rose (Table 2-5-8).

### (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 emergency 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 Law to include content mandating the establishment of committees concerning the acceptance standards. The revised Fire Service Law 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.

*28 Due to the effects of the Great East Japan Earthquake, the figures were totaled by excluding data from the fire defense headquarters at the Otsuchi District Administrative Affairs Association in Kamaishi between January and April 2011 and from the fire defense headquarters in Rikuzentakata City between January and March 2011. Moreover, rescue activities by Emergency Fire Response Teams in the wake of the Great East Japan Earthquake were excluded from the survey.

Each prefecture and local region gathers together firefighting agencies and medical organizations and sometimes just medical organizations, as well as expert medical practitioners, 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 Law 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 emergency medical institutions by local public bodies in an effort to enhance emergency medical care structures in local regions.

**Table 2-5-7** **Trends in the number of cases where four or more acceptance inquiries were made to medical institutions4**

(During each year)

| | 2011 | | 2012 | | 2013 | | 2014 | | 2015 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. | Percentage | No. | Percentage | No. | Percentage | No. | Percentage | No. | Percentage |
| Cases in which patients with severe conditions or worse are transported | 17,281 | 3.9% | 16,736 | 3.8% | 15,132 | 3.4% | 14,114 | 3.2% | 11,754 | 2.7% |
| Cases in which pregnant or perinatal patients are transported | 549 | 3.7% | 530 | 3.6% | 678 | 4.3% | 617 | 3.8% | 549 | 3.7% |
| Cases in which young patients are transported | 11,039 | 3.1% | 10,759 | 3.0% | 9,528 | 2.7% | 8,708 | 2.4% | 8,570 | 2.4% |
| Cases in which patients are transported to critical care centers | 24,014 | 4.0% | 25,324 | 3.9% | 27,528 | 3.9% | 26,740 | 3.6% | 25,411 | 3.3% |

(Notes) 1 Prepared based on the Survey on the Actual Acceptance Status at Medical Institutions for Emergency Transport in 2015.
2 There is some overlap.
3 The percentage indicates the percentage of each type against the total number of people transported.

**Table 2-5-8** **Trends in the number of cases where the time spent at the scene was 30 minutes or longer**

(During each year)

| | 2011 | | 2012 | | 2013 | | 2014 | | 2015 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. | Percentage | No. | Percentage | No. | Percentage | No. | Percentage | No. | Percentage |
| Cases in which patients with severe conditions or worse are transported | 21,794 | 4.9% | 23,033 | 5.2% | 23,950 | 5.4% | 23,500 | 5.3% | 22,379 | 5.2% |
| Cases in which pregnant or perinatal patients are transported | 1,022 | 6.8% | 1,019 | 6.9% | 1,333 | 8.4% | 1,267 | 7.8% | 1,194 | 7.9% |
| Cases in which young patients are transported | 9,600 | 2.7% | 10,431 | 2.9% | 11,986 | 3.5% | 11,423 | 3.2% | 12,039 | 3.4% |
| Cases in which patients are transported to critical care centers | 31,451 | 5.2% | 35,445 | 5.4% | 41,777 | 5.9% | 45,208 | 6.1% | 47,030 | 6.1% |

(Notes) 1 Prepared based on the Survey on the Actual Acceptance Status at Medical Institutions for Emergency Transport in 2015.
2 There is some overlap.
3 The percentage indicates the percentage of each type against the total number of people transported.

### (3) Emergency Medical Care Structure

With regards to the notification status of emergency hospitals and emergency clinics, which constitute the primary destinations to which patients are taken, as of April 1, 2016 there were 4,292 such locations throughout Japan (White Paper Attached Document 43).

There are 559 weekend and nighttime emergency care centers (as of March 31, 2016) that ensure that initial medical care can be received on weekends and at nights, which serve as the initial emergency medical care structure. By way of the secondary medical care structure, 2,733 hospitals on a hospital-group rotating system and joint-use hospitals have been established (as of March 31, 2016), and so have 284 critical care centers (as of August 1, 2016) 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 36 locations have been set in place (as of August 1, 2016).

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

Under these emergency medical care structures and through the acceptance standards enacted by the prefectures through the provisions of the Fire Service Law, 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 emergency transport operations.

Section 6

# Rescue Structures

## 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.

In 2015, torrential downpours in the Kanto and Tohoku Regions in September 2015 caused extensive flood damage, including breaching the embankments along the Kinugawa River. During this, a great many rescue activities were carried out in different regions under difficult circumstances in which there were fears that secondary disasters could occur. Examples of such activities include the fervent rescue activities in which rescue boats and other means were used to rescue residents who had been left stranded at home.

As for the implementation status for rescue activities throughout Japan in 2015, 55,966 rescue activities were carried out (a decrease of 729, or 1.3%, YoY) and 59,190 people were rescued (this refers to the number of people rescued through rescue activities; an increase of 1,381, or 2.4%, YoY) (Table 2-6-1, Attached Document 44 of the 2016 White Paper on Fire Service).

As part of this, the primary reason for the decline in the number of rescue activities is due to the fall in the number of rescue activities for traffic accidents (a decrease of 423, or 2.8%, YoY).

What is more, the main reason for the increase in the number of people rescued is due to the increase in storms, floods, and other natural disasters resulting from the torrential downpours in the Kanto and Tohoku Regions in September 2015 (an increase of 1,971 people, or 214.5%, YoY).

### (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, starting in 2013 it surpassed traffic accidents, which had been the type of incident with the most people rescued since 1978, to become the type with the most people rescued.

The number of rescue workers mobilized (which refers to the total number of people mobilized in order to carry out rescue activities) came to 1,328,039 in total. Of these, the number of firefighters mobilized came to 1,245,998 in total, of which 27.7% were mobilized due to traffic accidents, while 27.3% were mobilized due to accidents due to buildings. At the same time, the number of volunteer fire corps members mobilized came to 82,041 in total, of which 73.5% were mobilized 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 mobilized) came to 546,334 in total. This means that 9.8 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, storms, floods, and other natural disaster incidents had the greatest number at 20.6 people on average, followed by fires at 15.3 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 defense headquarters 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.* 29

*29 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 2-6-1 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. of people | Change YoY (%) |
| During 2011 | 57,641 | 4.7 | 63,618 | 8.4 |
| During 2012 | 56,103 | −2.7 | 59,338 | −6.7 |
| During 2013 | 56,915 | 1.4 | 57,659 | −2.8 |
| During 2014 | 56,695 | −0.4 | 57,809 | 0.3 |
| During 2015 | 55,966 | −1.3 | 59,190 | 2.4 |

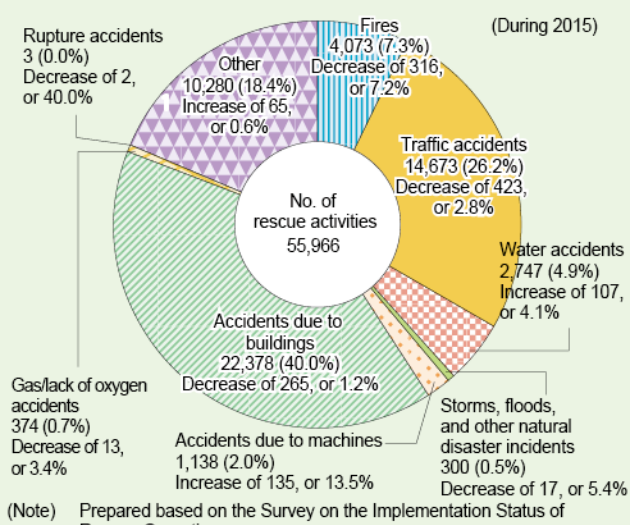
(Notes) 1 Prepared based on the Survey on the Implementation Status of Rescue Operations.
2 This includes the number of activities by volunteer fire corps in municipalities where fire defense headquarters/fire departments have not been established. The same holds true for the following data in this section.
3 Due to the effects of the Great East Japan Earthquake, the figures were totaled by excluding data from the fire defense headquarters at the Otsuchi District Administrative Affairs Association in Kamaishi and the fire defense headquarters in Rikuzentakata City from January 1–March 10, 2011.

As of April 2016, 1,418 crews had been established within 715 fire defense headquarters, and the number of rescue crew members came to 24,449 people. This means that on average, roughly 2.0 rescue crews have been established at each fire defense headquarters, with an average of 17.2 rescue crew members stationed on each crew. The number of fire defense headquarters and rescue crews have been dropping as they spread out to cover broader areas, but the number of rescue crews per fire defense headquarters and the number of crew members per rescue crew have been trending upward.

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

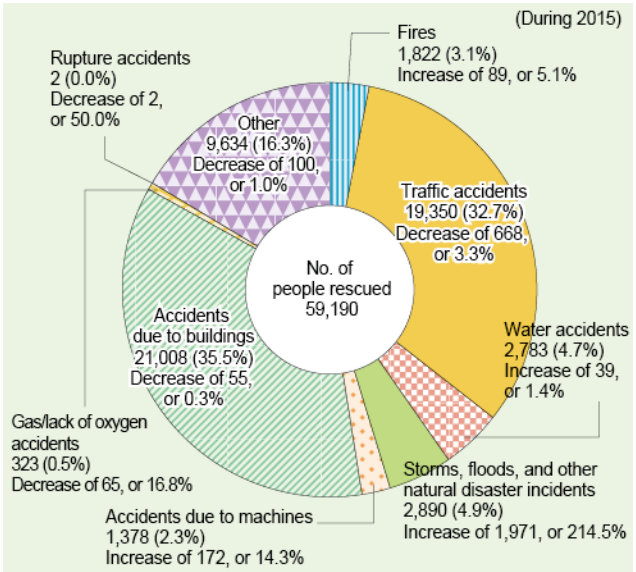
Rescue equipment for rescue activities includes equipment for removing heavy objects such as hydraulic spreaders, cutting equipment like hydraulic cutters, detection and measurement equipment such as inflammable gas measuring instruments, and more. Advanced, specialized equipment has been deemed necessary for them to guard against the large-scale earthquake disasters and terrorist disasters that could potentially occur. As such, the FDMA makes efforts to promote the establishment and maintenance of rescue work vehicles and rescue equipment by taking advantage of grants for equipping Emergency Fire Response Teams, as well as tax measures allocated to local governments and more (Table 2-6-3).

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




(Note) Prepared based on the Survey on the Implementation Status of Rescue Operations.

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




(Note) Prepared based on the Survey on the Implementation Status of Rescue Operations.

## Table 2-6-2 Number of mobilizations and status of activities by type of incident

(During 2015)

| Category \ Type of incident | | Fires | Traffic accidents | Water accidents | Storms, floods, and other natural disaster incidents | Accidents due to machines | Accidents due to buildings | Gas/lack of oxygen accidents | Rupture accidents | Other | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of rescue activities | | 4,073 (7.3) | 14,673 (26.2) | 2,747 (4.9) | 300 (0.5) | 1,138 (2.0) | 22,378 (40.0) | 374 (0.7) | 3 (0.0) | 10,280 (18.4) | 55,966 (100.0) |
| No. of people rescued | | 1,822 (3.1) | 19,350 (32.7) | 2,783 (4.7) | 2,890 (4.9) | 1,378 (2.3) | 21,008 (35.5) | 323 (0.5) | 2 (0.0) | 9,634 (16.3) | 59,190 (100.0) |
| Firefighters | No. of rescue workers mobilized | 137,088 (11.0) | 345,429 (27.7) | 78,457 (6.3) | 7,050 (0.6) | 25,743 (2.1) | 339,802 (27.3) | 11,123 (0.9) | 71 (0.0) | 301,235 (24.2) | 1,245,998 (100.0) |
| | No. of people who engaged in rescue activities | 54,495 (10.2) | 148,056 (27.8) | 38,868 (7.3) | 5,269 (1.0) | 11,476 (2.2) | 179,663 (33.7) | 3,888 (0.7) | 25 (0.0) | 91,691 (17.2) | 533,431 (100.0) |
| Volunteer firefighters | No. of rescue workers mobilized | 60,295 (73.5) | 1,421 (1.7) | 3,096 (3.8) | 1,146 (1.4) | 161 (0.2) | 2,098 (2.6) | 169 (0.2) | 0 (0.0) | 13,655 (16.6) | 82,041 (100.0) |
| | No. of people who engaged in rescue activities | 7,702 (59.7) | 136 (1.1) | 1,834 (14.2) | 924 (7.2) | 4 (0.0) | 23 (0.2) | 2 (0.0) | 0 (0.0) | 2,278 (17.7) | 12,903 (100.0) |
| No. of people who engaged in rescue activities per incident | | 15.3 | 10.1 | 14.8 | 20.6 | 10.1 | 8.0 | 10.4 | 8.3 | 9.1 | 9.8 |

(Notes)
1 Prepared based on the Survey on the Implementation Status of Rescue Operations.
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 mobilized" refers to the total number of people mobilized 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 mobilized.
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.

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

(As of April 1, 2016)

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | | 7,244 | 1,902 | 2,143 | 2,026 | 4,356 | 6,116 | 6,622 | 1,353 | 5,562 | 50,313 |
| | 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 | |
| | | 2,672 | 2,156 | 2,186 | 1,684 | 1,942 | 2,952 | 1,562 | 2,131 | 3,461 | |
| | 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 | | |
| | | 611 | 316 | 1,126 | 342 | 190 | 100 | 58 | 81 | | |
| Boarding vehicles | | Rescue work vehicles | Ladder-equipped vehicles | Folding ladder-equipped vehicles | Fire pump vehicles | Fire cistern-equipped vehicles | Chemical vehicles | Other | Total | | |
| | | 1,243 | 437 | 77 | 266 | 374 | 123 | 480 | 3,000 | | |

## 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 is divided up into a land division and a water division. For each division, a number of types of training are carried out. There is 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, as well as 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 45th meet was held on August 24, 2016 at Matsuyama City, marking the first time it has been held on Shikoku. Here, 697 crew members took part in the land division and 228 took part in the water division. The 46th meet will be held in Sendai City.

## Section 8 Wide-area Joint Firefighting Support and Emergency Fire Response Teams

## 1. Wide-area Joint Support for Firefighting – Omitted

## 2. Emergency Fire Response Teams

### (1) Creation of the Emergency Fire Response Teams and Their Enshrinement in Law via Revisions to the Fire Organization Act

#### A. Creation of the Emergency Fire Response Teams

The Emergency Fire Response Teams were created in June 1995 through the cooperation of fire defense headquarters 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 from 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, the Emergency Fire Response 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 mobilize 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, the Emergency Fire Response Teams consisted of 376 teams registered with the FDMA to provide domestic assistance for firefighting. They were comprised of rescue crews, emergency medical crews, and more (these numbered roughly 4,000 people if you include standby and replacement members). There were also 891 out-of-prefecture assistance teams that engaged in activities between neighboring prefectures, which consisted of firefighting teams and others (these numbered roughly 13,000 people if you include standby and replacement members). This brought the total to 1,267 teams (with roughly 17,000 people if you include standby and replacement members). In January 2011, a registration system for fire teams was introduced in order to enhance the mobilization structure for the Emergency Fire Response 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 protection helicopters and water teams that use firefighting boats. This brought the types of teams to eight, and the number of teams to 1,785 (with roughly 26,000 people if you include standby and replacement members).

#### 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, as have 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 content that includes prescribing financial measures for the national government.

(a) Main content of the revised law

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

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

The Emergency Fire Response 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 mobilize the Emergency Fire Response Teams. This authority to order mobilizations 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 mobilization of the Emergency Fire Response 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.

(c) Enactment of the Basic Plan pertaining to the Emergency Fire Response Teams

It has been legally mandated that the Minister for Internal Affairs and Communications is to enact the Plan on Basic Items concerning the Organization and Outfitting of Facilities for the Emergency Fire Response Teams (hereafter referred to as 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 the Emergency Fire Response Teams, mobilization plans, and targets for setting in place the necessary facilities. When it was initially enacted, it set the target of registering 3,000 Emergency Fire Response Teams by FY2008.

(d) Financial measures by the national government for the Emergency Fire Response Teams

The mobilization of the Emergency Fire Response Teams has been legally mandated in cases where they have been ordered to mobilize by the Commissioner of the FDMA. Therefore, the expenses that are newly required as a result of said mobilizations 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 Emergency Fire Response Teams free of charge

With regard to those pieces of equipment from among the equipment needed for the organization of the Emergency Fire Response 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 Emergency Fire Response 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 the Emergency Fire Response 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 mobilization of Emergency Fire Response 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 mobilize the Emergency Fire Response Teams by the Commissioner of the FDMA (Fig. 2-8-1).

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

This stipulated that prefectural governors can order the mobilization of Emergency Fire Response 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 Emergency Fire Response 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 (Fig. 2-8-2).

(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 the Emergency Fire Response Teams are mobilized 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. 2-8-3).

## Table 2-8-2 Enshrining the Emergency Fire Response Teams into law through the 2003 revisions to the Fire Organization Act

| | | Prior to the revisions | After the revisions |
|---|---|---|---|
| Position of the Emergency Fire Response Teams | | Guidelines for the Emergency Fire Response Teams | Fire Organization Act |
| Standards for organization and equipping the teams, basic plans for their mobilization | | Guidelines for the Emergency Fire Response 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<br>(2) Orders<br>(Tokai Earthquake and other large-scale earthquakes, NBC disasters) |
| Financial measures, etc. | Activity expenses | Special tax grants, etc. | Treasury expenses<br>(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 |

## Fig. 2-8-1 Overview of the 2008 revision to the Fire Organization Act

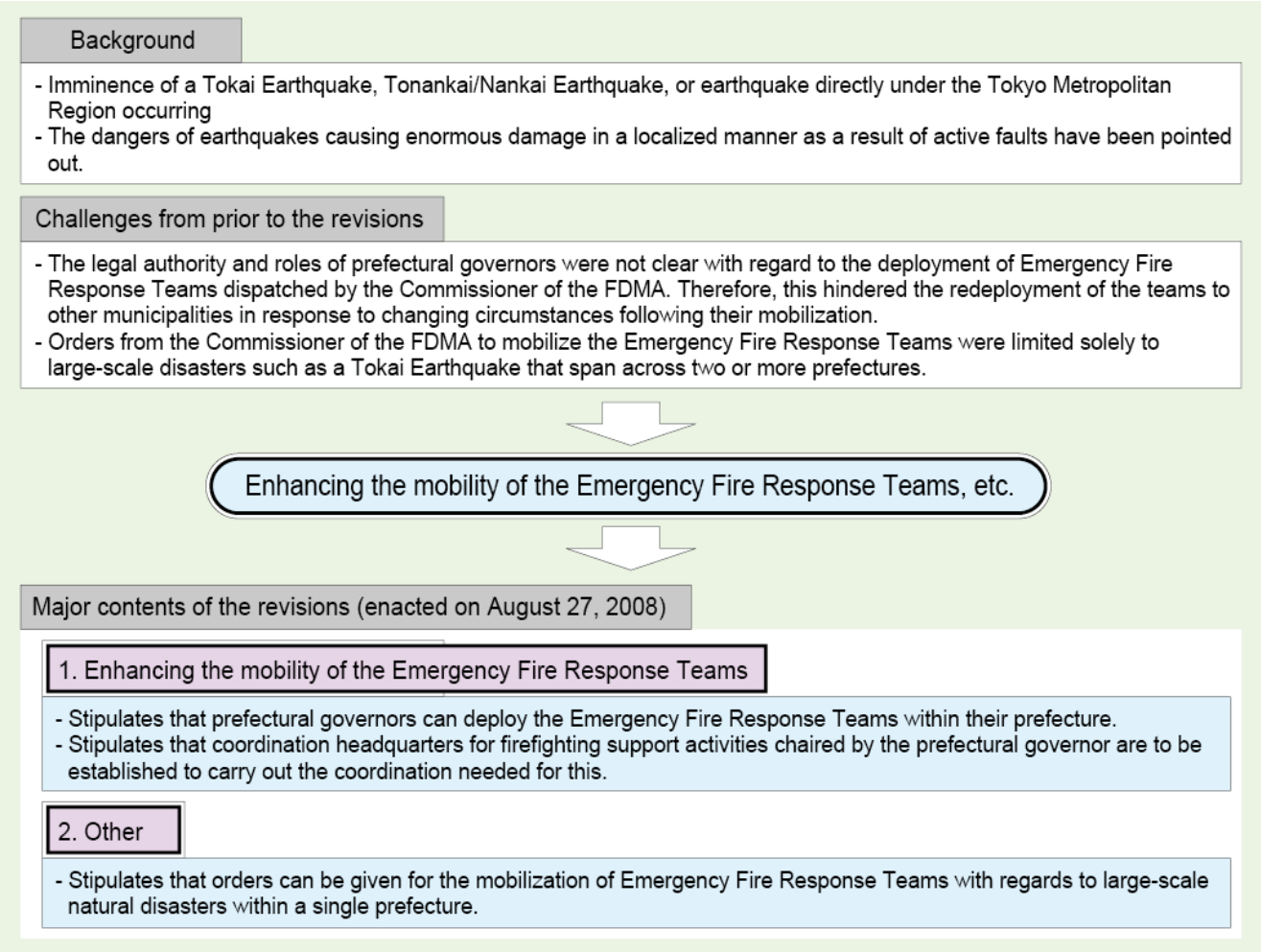
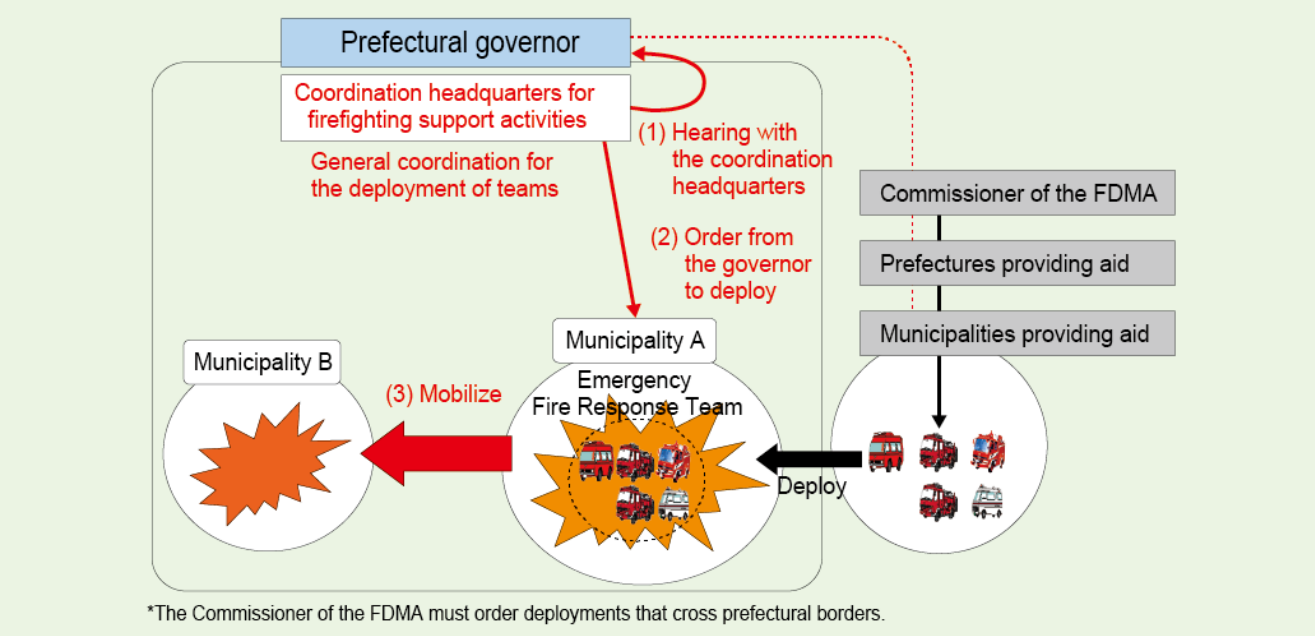


**Fig. 2-8-2** **Authority of prefectural governors to order mobilizations**




(d) Revisions to the requirements for the Commissioner of the FDMA to order the mobilization of the Emergency Fire Response 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 mobilize their Emergency Fire Response 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.

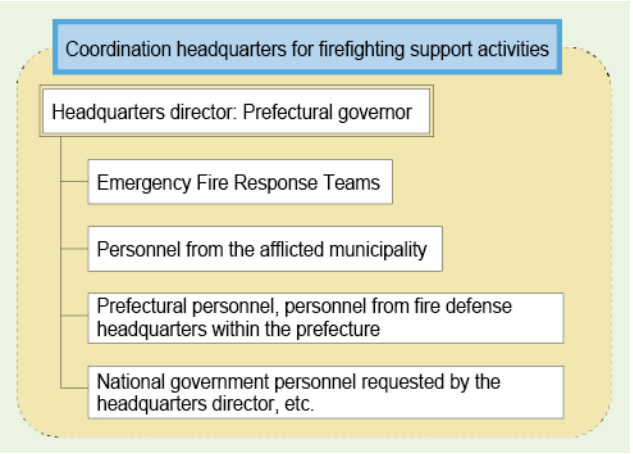
## (2) Organization of and Mobilization Plans for Emergency Fire Response Teams

Issues like the organization of and mobilization plans for the Emergency Fire Response 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 the Emergency Fire Response Teams

The Emergency Fire Response Teams are comprised of prefectural squads, command support teams organized for special purposes, joint task forces, and rapid response units for disasters involving energy and industrial infrastructure (Dragon Hyper Command Units). They act under the command of the mayor of the municipality in the afflicted region.

**Fig. 2-8-3** **Organization of coordination headquarters for firefighting support activities**




The prefectural squads are comprised of the teams needed to provide assistance to the afflicted region from among those teams registered with the fire defense headquarters within the prefecture.

The command support teams are comprised of the Tokyo Fire Department and fire defense headquarters from 20 ordinance-designated cities. They head out to emergencies in the afflicted municipality using helicopters and the like to gather information on the disaster. In addition, they provide assistance with command activities for the mayor of the municipality in question to ensure that the command of the Emergency Fire Response Teams is carried out smoothly in the afflicted region.

The joint task forces are units that are quickly mobilized ahead of the others to carry out highly-urgent firefighting activities and to gather information to inform the actions of the teams arriving later. The Dragon Hyper Command Unit is a team with expertise in responding to special disasters like those at petroleum complexes and chemical plants. The duties of the various units that comprise the Emergency Fire Response Teams are shown in Fig. 2-8-4.

## B. Mobilization Plans

### (A) Basic Mobilization 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 mobilize the Emergency Fire Response Teams, and take the measures to request or order their mobilization based on Article 44 of the Fire Organization Act. Mobilization plans are to be established ahead of time to enable their prompt and precise mobilization in such cases.

**Fig. 2-8-4 Organization of teams comprising the Emergency Fire Response Teams**

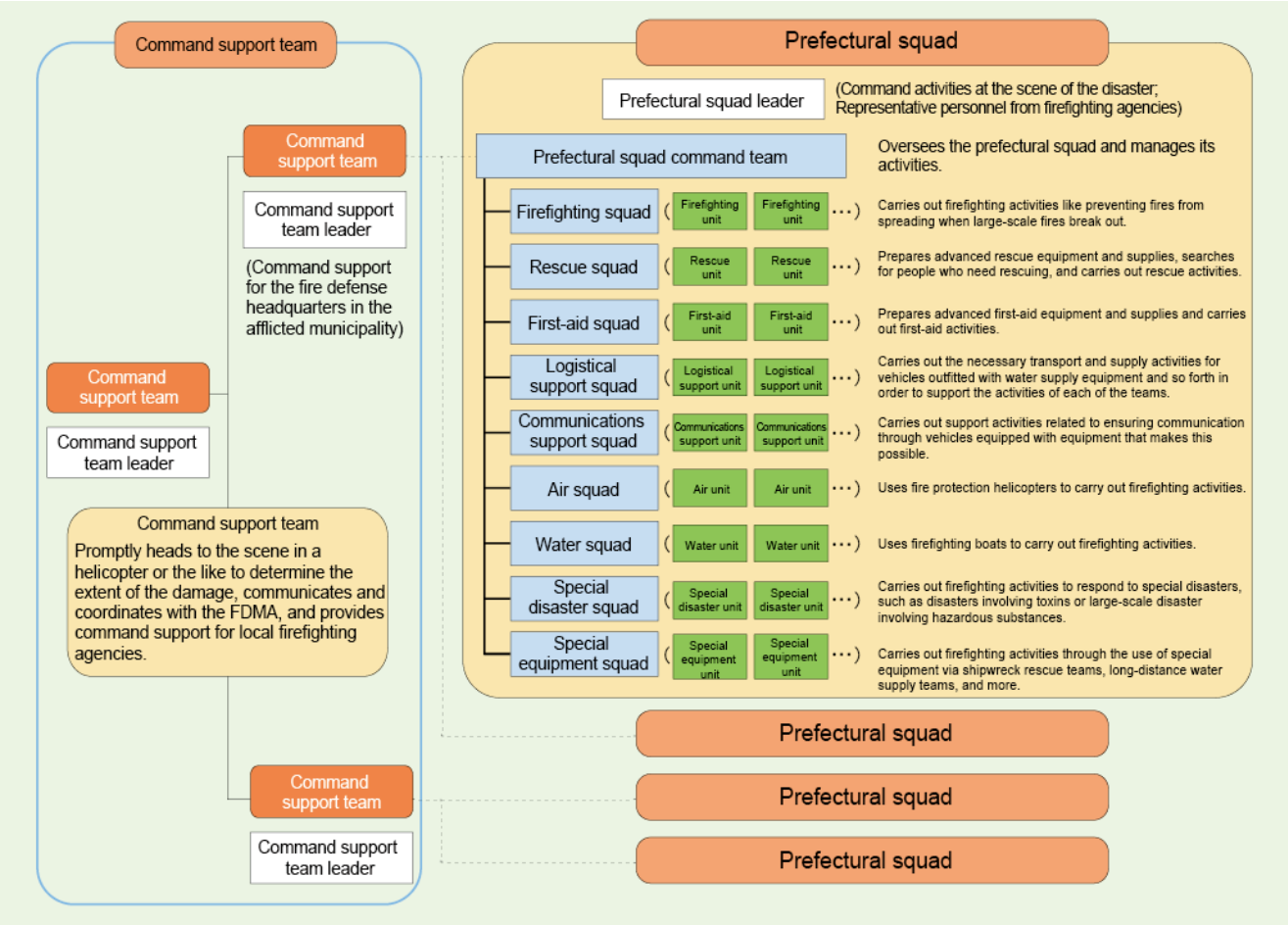
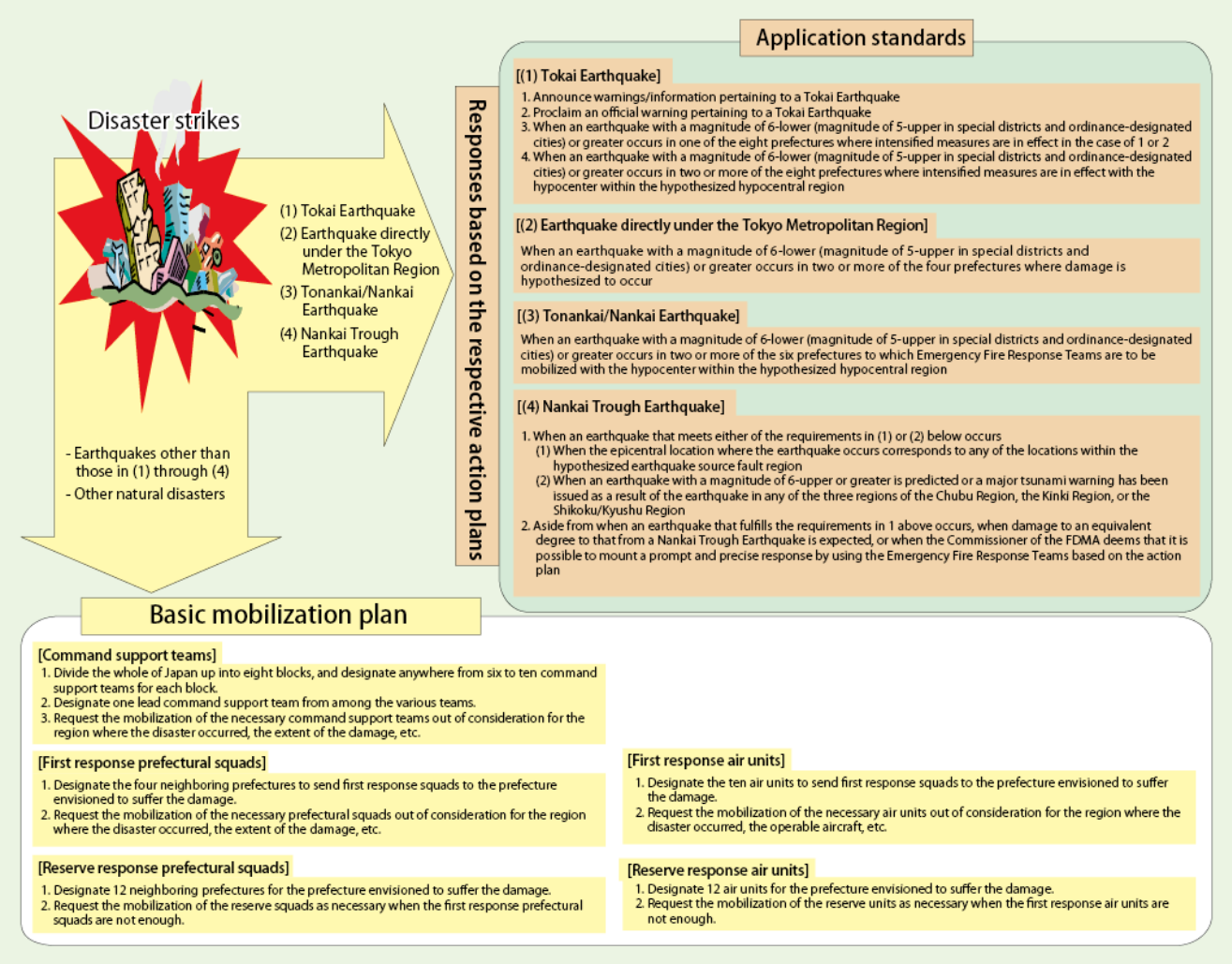


**Fig. 2-8-5** **Basic mobilization and action plans for the Emergency Fire Response Teams**




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

(B) Rapid Mobilization 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. In light of this, Emergency Fire Response Teams must be ready to be quickly mobilized to the afflicted region so that they can effectively save lives through firefighting, rescue, first-aid, and other such activities.

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

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

It is envisioned that a Tokai Earthquake, Tonankai/Nankai Earthquake, Nankai Trough Earthquake, earthquake directly below the Tokyo Metropolitan Region, or other large-scale earthquake would produce considerable damage that would extend over multiple prefectures. The thinking is that the firefighting capabilities of just the first response prefectural squads and reserve response prefectural squads alone would be insufficient for this. Therefore, it has been decided that Emergency Fire Response Teams would be mobilized at a national scale for these.

Therefore, the FDMA has formulated guidelines and action plans for using the Emergency Fire Response Teams for each of these disasters should they occur. This was done by envisioning a Tokai Earthquake, Tonankai/Nankai Earthquake, Nankai Trough 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.

For example, there is an Emergency Fire Response Team action plan for a Nankai Trough 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 Emergency Fire Response Team capable of providing assistance would be simultaneously and promptly deployed (Fig. 2-8-5). This is based on factors like the extent of the damage, and is pursuant to the four patterns for the plans for organizing the assistance prepared in advance.

As for the usage guidelines and action plan for an earthquake directly below the Tokyo Metropolitan Region, these were revised following the promulgation of the Act on Special Measures against Tokyo Inland Earthquake in November 2013.

(D) Assistance Plans by the Prefectures

Each prefecture formulates its own Implementation Plans for Assistance from Emergency Fire Response Teams based on the registration status of Emergency Fire Response 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 squads and other teams, meeting locations, information communication structures, and other necessary items concerning the prompt mobilization of Emergency Fire Response Teams to afflicted regions.

What is more, the fire defense headquarters must likewise formulate assistance plans while striving for consistency with the contents of the assistance plans formulated by the prefectures for the sake of promptly mobilizing the Emergency Fire Response Teams to afflicted regions.

### C. Requests for Assistance

Based on the lessons from the disasters that occurred in 2014, in March 2015 the Guidelines on the Use of the Emergency Fire Response Teams were revised, and the following content was prescribed through the Guidelines on Requests for Assistance from Emergency Fire Response Teams and the Guidelines on the Use of the Emergency Fire Response Teams.

(a) Requests for immediate assistance

The guidelines stated that in the event that a large-scale disaster occurs, prefectural governors are to request assistance when the damage is expected to expand to a considerable degree and they deem the assistance of the Emergency Fire Response Teams to be necessary. This is to be done even in situations where the extent of the damage cannot be immediately determined in detail so as to ensure that requests for immediate assistance can be made.

What is more, it had been common practice from before for requests for assistance from the prefectural governors to be made in writing based on the official forms. But the guidelines now state that the need for assistance can be conveyed over the phone. What is more, when prefectural governors request the dispatch of the Japan Self-Defense Forces (JSDF) in response to disasters, they are to consider the need for assistance from the Emergency Fire Response Teams at the same time.

(b) Coordination with relevant organizations

The guidelines stipulate that coordination headquarters for firefighting support activities are to be set up in locations where they can closely coordinate with not only prefectural disaster response headquarters, but also the government's local response headquarters and relevant organizations. This is designed to strengthen coordination with the relevant organizations (JSDF, police, Japan Coast Guard, DMAT, etc.) at the prefectural level.

Moreover, at the municipal level the command support headquarters is to be set up at a location that would allow for close coordination with the municipal disaster response headquarters and the command headquarters (established within the fire defense headquarters of the afflicted region). The guidelines also stipulated that the team members are to be dispatched to the municipal disaster response headquarters or the command headquarters based on the judgment of the head of the command support headquarters as needed. Both of these measures are designed to enhance coordination with the relevant organizations.

### D. Plans for Receiving Assistance

Each prefecture formulates Plans for Receiving Assistance from the Emergency Fire Response 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 the Emergency Fire Response Teams. Examples of these include how to operate the coordination headquarters and air support coordination teams in times of normalcy, as well as points of ingress, billeting locations, and refueling bases. It is envisioned that a large number of aircraft from organizations such as firefighting agencies, the police, the Japan Coast Guard, the JSDF, and helicopter ambulances will amass in order to provide assistance to the afflicted region, particularly when large-scale disasters occur. As such, the guidelines state that air support coordination teams are to be established within the prefectural disaster response headquarters in an effort to provide safe and smooth air support coordination.

What is more, the fire defense headquarters must likewise formulate plans for receiving assistance while striving for consistency with the contents of the plans for receiving assistance and regional firefighting plans formulated by the prefectures for the sake of receiving the Emergency Fire Response Teams in their region.

### (3) Number of Emergency Fire Response 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 the Emergency Fire Response Teams based on applications to do so from the prefectural governors or municipal mayors.

Since the launch of the 1,267 Emergency Fire Response 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, 2016 5,301 teams have been registered from 726 fire defense headquarters nationwide (roughly 99% of the fire defense headquarters nationwide). This is an increase of 317 teams over and above the number registered in April 1, 2015 (of 4,984 teams) (Table 2-8-3).

In March 2014, the basic plan was revised and a target for the number of teams registered was set for the end of FY2018 that would substantially increase the number of teams from its current level of roughly about 4,500 to roughly 6,000 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.

#### b. Equipment

Since they were first launched, the FDMA has formulated standards for the equipment for the Emergency Fire Response 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 the Emergency Fire Response 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 the Emergency Fire Response Teams for their team activities and logistical activities is allocated to fire defense headquarters and other sites throughout Japan. Such equipment includes systems for water sources for firefighting capable of handling 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.

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 the Emergency Fire Response Teams” and “Facilities to serve as bases for wide-area activities for the Emergency Fire Response 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 rescue crews to carry out rescue activities in a self-reliant manner.

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

## Table 2-8-3 Registration status of Emergency Fire Response Teams in FY2016

(As of April 1, 2016; Unit: teams)

| Prefecture | Total | Total excluding duplication | Command support teams | Joint task force command teams | Rapid response units for disasters involving energy and industrial infrastructure | Prefectural squad command teams | Firefighting units | Rescue units | First-aid units | Logistical support units | Communication support units | Special disaster units | | | Special equipment units | | | | | Air units | Water units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Disasters involving toxic substances | Large-scale fires involving hazardous substances | Fires in enclosed spaces | Long-distance water supply | Motorcycles | Earthquake response | Shipwreck rescue teams | Other special vehicles | | |
| Hokkaido | 292 | 280 | 2 | 1 | | 6 | 111 | 23 | 74 | 38 | 1 | 10 | 6 | 1 | 2 | | 1 | 4 | 9 | 3 | |
| Aomori | 105 | 103 | | 1 | | 3 | 39 | 6 | 23 | 18 | | 1 | 9 | | | | 1 | 1 | 2 | 1 | |
| Iwate | 90 | 87 | | 1 | | 3 | 35 | 6 | 21 | 17 | 1 | 2 | | | | | | 1 | 2 | 1 | |
| Miyagi | 122 | 119 | 3 | 1 | | 3 | 45 | 9 | 20 | 21 | 1 | 3 | 3 | 1 | 2 | | 1 | 1 | 5 | 3 | |
| Akita | 83 | 81 | | 1 | | 3 | 34 | 7 | 18 | 11 | | 1 | 5 | | | | | | 2 | 1 | |
| Yamagata | 63 | 62 | | 1 | | 2 | 24 | 6 | 15 | 11 | | 1 | | | | | | | 2 | 1 | |
| Fukushima | 111 | 108 | | 1 | | 2 | 39 | 7 | 32 | 19 | 1 | 2 | 3 | | | | | | 4 | 1 | |
| Ibaraki | 158 | 153 | | 2 | | 3 | 52 | 14 | 36 | 25 | | 5 | 3 | | | | 2 | 1 | 13 | 1 | 1 |
| Tochigi | 103 | 97 | | 1 | | 2 | 37 | 8 | 24 | 19 | | 5 | | | | | | | 6 | 1 | |
| Gunma | 90 | 87 | | 1 | | 3 | 34 | 6 | 22 | 13 | 1 | 4 | | | | | 1 | | 4 | 1 | |
| Saitama | 227 | 222 | 2 | 1 | | 3 | 83 | 25 | 46 | 36 | | 10 | | | | | 3 | | 15 | 3 | |
| Chiba | 265 | 258 | 3 | 1 | 1 | 2 | 90 | 22 | 56 | 48 | 1 | 8 | 9 | 1 | | | 1 | | 18 | 2 | 2 |
| Tokyo | 308 | 307 | 3 | 1 | | 3 | 146 | 13 | 54 | 36 | 1 | 2 | 6 | 2 | 2 | 4 | 3 | 2 | 18 | 8 | 4 |
| Kanagawa | 265 | 262 | 6 | 1 | | 3 | 86 | 21 | 47 | 36 | 2 | 10 | 7 | 3 | 4 | | 5 | 7 | 21 | 4 | 2 |
| Niigata | 136 | 135 | 3 | 1 | | 3 | 48 | 15 | 31 | 21 | 2 | 1 | 4 | | 2 | | | | 4 | 1 | |
| Toyama | 84 | 81 | | 1 | | 3 | 27 | 8 | 18 | 14 | 1 | 2 | | 1 | | | | 2 | 6 | 1 | |
| Ishikawa | 75 | 71 | | 1 | | 2 | 24 | 5 | 14 | 14 | 1 | 3 | 3 | | | 1 | | | 6 | 1 | |
| Fukui | 63 | 62 | | | | 3 | 24 | 5 | 12 | 10 | 1 | 2 | 3 | | | | | | 2 | 1 | |
| Yamanashi | 54 | 51 | | 1 | | 2 | 14 | 5 | 14 | 12 | 1 | 2 | | | | | | | 2 | 1 | |
| Nagano | 126 | 124 | | | | 2 | 43 | 14 | 30 | 18 | 2 | 3 | | | | 2 | | | 11 | 1 | |
| Gifu | 122 | 117 | | 3 | | 4 | 46 | 11 | 35 | 14 | | 2 | | | | | | | 5 | 2 | |
| Shizuoka | 146 | 145 | 4 | 1 | 1 | 2 | 46 | 13 | 30 | 22 | | 2 | 5 | | 2 | 2 | 3 | 1 | 9 | 3 | |
| Aichi | 264 | 254 | 3 | 1 | | 3 | 88 | 24 | 56 | 44 | 1 | 12 | 3 | 3 | | | 2 | 1 | 19 | 3 | 1 |
| Mie | 95 | 93 | | 1 | 1 | 2 | 34 | 6 | 26 | 12 | | 1 | 5 | | | | | | 6 | 1 | |
| Shiga | 62 | 58 | | 1 | | 2 | 20 | 5 | 13 | 11 | 1 | 3 | | | | | | | 4 | 1 | 1 |
| Kyoto | 102 | 98 | 3 | 1 | | 3 | 33 | 7 | 20 | 15 | 1 | 3 | | 1 | 1 | | 2 | 2 | 8 | 2 | |
| Osaka | 247 | 241 | 4 | 1 | | 4 | 92 | 21 | 46 | 29 | 2 | 7 | 9 | 1 | 3 | | 1 | 2 | 21 | 2 | 2 |
| Hyogo | 215 | 210 | 2 | 1 | 1 | 3 | 73 | 19 | 57 | 26 | 2 | 8 | 5 | | 4 | | 1 | | 9 | 3 | 1 |
| Nara | 52 | 50 | | | | 2 | 15 | 5 | 13 | 10 | | 2 | | | | | | | 4 | 1 | |
| Wakayama | 70 | 66 | | 1 | | 2 | 24 | 8 | 16 | 11 | 1 | 4 | | | | | | | 2 | 1 | |
| Tottori | 44 | 42 | | 1 | | 3 | 16 | 3 | 7 | 7 | 1 | 2 | | | | | | 1 | 2 | 1 | |
| Shimane | 60 | 59 | | | | 2 | 20 | 5 | 18 | 8 | | 1 | | | | | 1 | | 4 | 1 | |
| Okayama | 101 | 98 | 2 | 1 | | 3 | 29 | 12 | 23 | 14 | 1 | 3 | 3 | | | | 1 | | 7 | 2 | |
| Hiroshima | 151 | 149 | 2 | 1 | | 2 | 52 | 11 | 36 | 21 | 1 | 3 | 3 | | 2 | 2 | | 1 | 10 | 2 | 2 |
| Yamaguchi | 72 | 71 | | | | 2 | 26 | 7 | 17 | 11 | | 2 | | | | | | 2 | 4 | 1 | |
| Tokushima | 50 | 48 | | 1 | | 3 | 13 | 6 | 14 | 6 | 1 | 1 | 3 | | | | | | 1 | 1 | |
| Kagawa | 49 | 47 | | 1 | | 3 | 18 | 4 | 11 | 7 | | 2 | | | | | | | 2 | 1 | |
| Ehime | 81 | 78 | | 1 | | 2 | 24 | 9 | 19 | 12 | | 2 | 3 | | 2 | | 1 | | 4 | 1 | 1 |
| Kochi | 50 | 49 | | 1 | | 2 | 15 | 4 | 13 | 8 | 1 | 2 | | | | | | | 2 | 2 | |
| Fukuoka | 138 | 133 | 4 | 2 | | 4 | 37 | 10 | 31 | 17 | 1 | 8 | 1 | 1 | | | 1 | 3 | 13 | 3 | 2 |
| Saga | 43 | 41 | | 1 | | 2 | 13 | 4 | 10 | 8 | | 1 | | | | | | | 4 | | |
| Nagasaki | 73 | 72 | | | | 2 | 27 | 6 | 22 | 9 | | 2 | 3 | | | | | | 1 | 1 | |
| Kumamoto | 96 | 93 | 2 | 1 | | 2 | 27 | 12 | 24 | 13 | 1 | 4 | | | | 2 | 1 | 1 | 5 | 1 | |
| Oita | 56 | 55 | | 1 | | 2 | 20 | 6 | 11 | 11 | | 1 | | | | | | 1 | 2 | 1 | |
| Miyazaki | 49 | 47 | | | | 2 | 16 | 4 | 12 | 10 | | 2 | | | | | | | 2 | 1 | |
| Kagoshima | 91 | 87 | | 1 | | 3 | 26 | 10 | 28 | 11 | 1 | 3 | 3 | | | | 1 | | 3 | 1 | |
| Okinawa | 52 | 50 | | | | 2 | 19 | 5 | 17 | 6 | | 2 | | | | | 1 | | | | |
| Total | 5,451 | 5,301 | 48 | 43 | 4 | 124 | 1,904 | 462 | 1,232 | 810 | 33 | 162 | 107 | 15 | 26 | 13 | 34 | 34 | 305 | 76 | 19 |

## Attachment 6 Extent of fire damage by prefecture

(During 2015)

| Classification / Prefecture | No.of fires | | | | | | | No. of buildings burned | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Buildings | Forests | Vehicles | Ships | Aircraft | Other | Total | Totally destroyed | Half destroyed | Partially destroyed | Minor fire |
| Hokkaido | 1,909 | 1,147 | 40 | 375 | 8 | 1 | 338 | 1,448 | 334 | 128 | 398 | 588 |
| Aomori | 600 | 299 | 58 | 63 | 2 | 0 | 178 | 515 | 186 | 39 | 132 | 158 |
| Iwate | 479 | 259 | 51 | 53 | 0 | 0 | 116 | 412 | 165 | 21 | 129 | 97 |
| Miyagi | 779 | 410 | 27 | 82 | 2 | 0 | 258 | 594 | 167 | 24 | 147 | 256 |
| Akita | 373 | 211 | 34 | 45 | 2 | 0 | 81 | 375 | 147 | 20 | 118 | 90 |
| Yamagata | 372 | 190 | 35 | 34 | 0 | 0 | 113 | 299 | 95 | 16 | 98 | 90 |
| Fukushima | 660 | 356 | 55 | 77 | 0 | 0 | 172 | 584 | 222 | 27 | 187 | 148 |
| Ibaraki | 1,159 | 570 | 43 | 144 | 1 | 0 | 401 | 992 | 344 | 46 | 273 | 329 |
| Tochigi | 778 | 361 | 41 | 98 | 0 | 0 | 278 | 614 | 248 | 25 | 182 | 159 |
| Gunma | 880 | 423 | 17 | 91 | 0 | 0 | 349 | 727 | 234 | 37 | 197 | 259 |
| Saitama | 1,988 | 1,081 | 11 | 213 | 0 | 0 | 683 | 1,665 | 312 | 86 | 503 | 764 |
| Chiba | 2,005 | 1,028 | 65 | 191 | 4 | 1 | 716 | 1,517 | 336 | 95 | 388 | 698 |
| Tokyo | 4,477 | 2,940 | 4 | 299 | 3 | 3 | 1,228 | 3,413 | 121 | 112 | 647 | 2,533 |
| Kanagawa | 2,064 | 1,250 | 4 | 206 | 5 | 0 | 599 | 1,612 | 177 | 70 | 422 | 943 |
| Niigata | 578 | 373 | 13 | 77 | 2 | 0 | 113 | 627 | 179 | 43 | 195 | 210 |
| Tomiyama | 188 | 138 | 3 | 23 | 1 | 0 | 23 | 161 | 34 | 15 | 40 | 72 |
| Ishikawa | 240 | 132 | 17 | 32 | 1 | 0 | 58 | 206 | 48 | 17 | 69 | 72 |
| Fukui | 185 | 106 | 3 | 31 | 1 | 0 | 44 | 162 | 35 | 8 | 57 | 62 |
| Yamanashi | 359 | 156 | 16 | 40 | 0 | 0 | 147 | 241 | 93 | 16 | 61 | 71 |
| Nagano | 820 | 390 | 25 | 64 | 0 | 0 | 341 | 611 | 226 | 53 | 174 | 158 |
| Gifu | 674 | 358 | 17 | 69 | 0 | 0 | 230 | 524 | 125 | 33 | 160 | 206 |
| Shizuoka | 1,080 | 575 | 16 | 136 | 3 | 0 | 350 | 819 | 196 | 50 | 220 | 353 |
| Aichi | 2,022 | 1,138 | 23 | 232 | 7 | 0 | 622 | 1,534 | 251 | 86 | 440 | 757 |
| Mie | 604 | 331 | 16 | 74 | 1 | 1 | 181 | 579 | 180 | 32 | 159 | 208 |
| Shiga | 405 | 219 | 9 | 57 | 1 | 0 | 119 | 306 | 49 | 18 | 71 | 168 |
| Kyoto | 529 | 341 | 9 | 73 | 0 | 0 | 106 | 495 | 95 | 29 | 146 | 225 |
| Osaka | 2,233 | 1,549 | 11 | 210 | 2 | 0 | 461 | 1,927 | 136 | 103 | 492 | 1,196 |
| Hyogo | 1,610 | 873 | 45 | 163 | 6 | 0 | 523 | 1,143 | 186 | 66 | 299 | 592 |
| Nara | 467 | 206 | 7 | 53 | 0 | 0 | 201 | 292 | 65 | 15 | 75 | 137 |
| Wakayama | 294 | 170 | 5 | 26 | 0 | 0 | 93 | 273 | 71 | 15 | 74 | 113 |
| Tottori | 203 | 108 | 7 | 15 | 2 | 0 | 71 | 161 | 44 | 10 | 54 | 53 |
| Shimane | 293 | 138 | 16 | 25 | 0 | 0 | 114 | 226 | 103 | 10 | 46 | 67 |
| Okayama | 599 | 354 | 30 | 62 | 3 | 0 | 150 | 578 | 182 | 52 | 176 | 168 |
| Hiroshima | 859 | 496 | 40 | 83 | 3 | 0 | 237 | 743 | 200 | 51 | 200 | 292 |
| Yamaguchi | 422 | 227 | 21 | 50 | 2 | 0 | 122 | 392 | 130 | 17 | 114 | 131 |
| Tokushima | 225 | 140 | 8 | 26 | 1 | 0 | 50 | 279 | 74 | 77 | 66 | 62 |
| Kagawa | 323 | 187 | 5 | 28 | 3 | 0 | 100 | 292 | 77 | 26 | 103 | 86 |
| Ehime | 422 | 269 | 10 | 43 | 5 | 0 | 95 | 408 | 110 | 26 | 119 | 153 |
| Kochi | 297 | 157 | 13 | 32 | 2 | 0 | 93 | 264 | 95 | 13 | 96 | 60 |
| Fukuoka | 1,395 | 872 | 34 | 134 | 4 | 0 | 351 | 1,176 | 214 | 59 | 368 | 535 |
| Saga | 259 | 127 | 14 | 32 | 0 | 0 | 86 | 193 | 60 | 15 | 63 | 55 |
| Nagano | 394 | 206 | 15 | 45 | 5 | 0 | 123 | 331 | 106 | 21 | 80 | 124 |
| Kumamoto | 547 | 312 | 35 | 70 | 2 | 1 | 127 | 474 | 142 | 22 | 115 | 195 |
| Oita | 379 | 200 | 30 | 37 | 2 | 0 | 110 | 272 | 79 | 20 | 61 | 112 |
| Miyazaki | 481 | 239 | 38 | 48 | 1 | 0 | 155 | 399 | 119 | 22 | 128 | 130 |
| Kagoshima | 670 | 372 | 27 | 66 | 7 | 0 | 198 | 579 | 207 | 26 | 119 | 227 |
| Okinawa | 532 | 213 | 43 | 61 | 3 | 0 | 212 | 346 | 132 | 22 | 77 | 115 |
| Prefectural total | 39,111 | 22,197 | 1,106 | 4,188 | 97 | 7 | 11,516 | 31,780 | 7,131 | 1,834 | 8,538 | 14,277 |
| Sapporo City | 546 | 355 | 0 | 105 | 0 | 0 | 86 | 414 | 34 | 27 | 121 | 232 |
| Sendai City | 294 | 162 | 2 | 30 | 0 | 0 | 100 | 201 | 26 | 4 | 34 | 137 |
| Saitama City | 320 | 195 | 0 | 31 | 0 | 0 | 94 | 271 | 31 | 12 | 86 | 142 |
| Chiba City | 279 | 160 | 3 | 35 | 0 | 0 | 81 | 212 | 26 | 9 | 41 | 136 |
| Special wards | 3,252 | 2,251 | 0 | 187 | 2 | 2 | 810 | 2,613 | 65 | 78 | 505 | 1,965 |
| Yokohama City | 750 | 465 | 0 | 75 | 2 | 0 | 208 | 571 | 48 | 32 | 144 | 347 |
| Kawasaki City | 370 | 229 | 0 | 29 | 2 | 0 | 110 | 269 | 20 | 6 | 87 | 156 |
| Sagamihara City | 163 | 107 | 2 | 13 | 0 | 0 | 41 | 139 | 20 | 4 | 40 | 75 |
| Niigata City | 125 | 85 | 0 | 22 | 2 | 0 | 16 | 160 | 34 | 9 | 51 | 66 |
| Shizuoka City | 204 | 111 | 1 | 31 | 0 | 0 | 61 | 150 | 31 | 7 | 32 | 80 |
| Hamamatsu City | 201 | 114 | 5 | 28 | 0 | 0 | 54 | 180 | 52 | 7 | 55 | 66 |
| Nagoya City | 558 | 366 | 3 | 55 | 2 | 0 | 132 | 416 | 25 | 16 | 132 | 243 |
| Kyoto City | 232 | 170 | 2 | 35 | 0 | 0 | 25 | 245 | 23 | 17 | 72 | 133 |
| Osaka City | 870 | 646 | 0 | 50 | 2 | 0 | 172 | 737 | 19 | 20 | 195 | 503 |
| Sakai City | 199 | 141 | 0 | 21 | 0 | 0 | 37 | 178 | 8 | 15 | 38 | 117 |
| Kobe City | 451 | 259 | 8 | 53 | 1 | 0 | 130 | 312 | 21 | 16 | 82 | 193 |
| Okayama City | 177 | 108 | 3 | 14 | 0 | 0 | 52 | 152 | 31 | 14 | 56 | 51 |
| Hiroshima City | 289 | 190 | 3 | 17 | 0 | 0 | 79 | 234 | 20 | 18 | 69 | 127 |
| Kitakyushu City | 257 | 177 | 2 | 24 | 1 | 0 | 53 | 235 | 46 | 9 | 67 | 113 |
| Fukuoka City | 281 | 203 | 7 | 27 | 0 | 0 | 44 | 224 | 11 | 6 | 80 | 127 |
| Kumamoto City | 180 | 113 | 5 | 27 | 0 | 0 | 35 | 168 | 29 | 6 | 39 | 94 |
| 21 city total | 9,998 | 6,607 | 46 | 909 | 14 | 2 | 2,420 | 8,081 | 620 | 332 | 2,026 | 5,103 |

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

## Attachment 6 Extent of fire damage by prefecture (continued)

(During 2015)

| Classification / Prefecture | Area burned | | | No. of casualties | | No. of households affected | | | | No. of people affected |
|---|---|---|---|---|---|---|---|---|---|---|
| | Building floor area (m²) | Building surface area (m²) | Forests (a) | Fatalities | Injured | Total | Totally destroyed | Half destroyed | Minor destruction | |
| Hokkaido | 59,261 | 6,238 | 2,403 | 68 | 310 | 837 | 168 | 94 | 575 | 1,734 |
| Aomori | 31,646 | 2,135 | 2,626 | 35 | 99 | 256 | 87 | 21 | 148 | 635 |
| Iwate | 27,080 | 2,042 | 3,878 | 41 | 85 | 205 | 84 | 16 | 105 | 518 |
| Miyagi | 19,941 | 1,176 | 179 | 28 | 105 | 302 | 62 | 15 | 225 | 827 |
| Akita | 23,505 | 2,362 | 2,288 | 40 | 86 | 232 | 93 | 18 | 121 | 521 |
| Yamagata | 27,959 | 1,371 | 497 | 15 | 56 | 138 | 39 | 4 | 95 | 395 |
| Fukushima | 26,722 | 2,645 | 3,579 | 41 | 102 | 294 | 104 | 15 | 175 | 736 |
| Ibaraki | 35,061 | 4,997 | 902 | 48 | 178 | 496 | 161 | 22 | 313 | 1,213 |
| Tochigi | 25,039 | 1,598 | 1,396 | 43 | 112 | 309 | 114 | 9 | 186 | 816 |
| Gunma | 27,313 | 4,081 | 279 | 35 | 131 | 348 | 100 | 24 | 224 | 811 |
| Saitama | 44,286 | 8,212 | 174 | 75 | 305 | 1,130 | 221 | 75 | 834 | 2,698 |
| Chiba | 38,815 | 3,805 | 788 | 87 | 307 | 909 | 232 | 84 | 593 | 2,080 |
| Tokyo | 21,200 | 9,505 | 97 | 99 | 827 | 2,411 | 205 | 198 | 2,008 | 4,827 |
| Kanagawa | 36,760 | 4,267 | 63 | 90 | 382 | 1,212 | 254 | 87 | 871 | 2,521 |
| Niigata | 34,776 | 2,982 | 223 | 31 | 108 | 338 | 99 | 21 | 218 | 936 |
| Tomiyama | 14,426 | 446 | 58 | 14 | 48 | 95 | 25 | 14 | 56 | 264 |
| Ishikawa | 7,483 | 850 | 226 | 9 | 38 | 146 | 27 | 11 | 108 | 358 |
| Fukui | 9,345 | 802 | 13 | 9 | 22 | 82 | 24 | 5 | 53 | 201 |
| Yamanashi | 9,182 | 362 | 358 | 15 | 50 | 134 | 35 | 18 | 81 | 292 |
| Nagano | 28,390 | 1,701 | 5,687 | 27 | 123 | 356 | 87 | 86 | 183 | 785 |
| Gifu | 27,930 | 3,645 | 81 | 29 | 104 | 309 | 69 | 20 | 220 | 737 |
| Shizuoka | 25,206 | 3,026 | 180 | 40 | 153 | 461 | 116 | 21 | 324 | 1,197 |
| Aichi | 41,113 | 6,392 | 102 | 75 | 333 | 1,022 | 170 | 69 | 783 | 2,364 |
| Mie | 24,853 | 1,399 | 112 | 20 | 98 | 262 | 72 | 25 | 165 | 604 |
| Shiga | 8,109 | 775 | 26 | 10 | 65 | 154 | 32 | 10 | 112 | 397 |
| Kyoto | 12,546 | 2,722 | 30 | 18 | 105 | 315 | 46 | 28 | 241 | 648 |
| Osaka | 33,251 | 6,676 | 120 | 78 | 443 | 1,697 | 236 | 113 | 1,348 | 3,469 |
| Hyogo | 34,862 | 2,213 | 581 | 62 | 232 | 777 | 160 | 65 | 552 | 1,773 |
| Nara | 8,555 | 672 | 62 | 16 | 55 | 186 | 49 | 8 | 129 | 441 |
| Wakayama | 9,873 | 439 | 30 | 13 | 54 | 181 | 45 | 15 | 121 | 416 |
| Tottori | 8,406 | 256 | 64 | 7 | 31 | 88 | 20 | 6 | 62 | 224 |
| Shimane | 11,190 | 579 | 861 | 8 | 34 | 98 | 38 | 1 | 59 | 228 |
| Okayama | 22,178 | 1,834 | 2,296 | 31 | 99 | 325 | 122 | 23 | 180 | 701 |
| Hiroshima | 27,890 | 3,147 | 812 | 43 | 130 | 481 | 123 | 25 | 333 | 1,096 |
| Yamaguchi | 15,733 | 714 | 15,276 | 20 | 68 | 218 | 86 | 9 | 123 | 427 |
| Tokushima | 10,769 | 851 | 2,813 | 10 | 34 | 106 | 33 | 7 | 66 | 235 |
| Kagawa | 10,347 | 960 | 12 | 14 | 54 | 151 | 44 | 15 | 92 | 340 |
| Ehime | 15,037 | 1,068 | 103 | 24 | 59 | 244 | 70 | 15 | 159 | 551 |
| Kochi | 10,639 | 1,577 | 154 | 16 | 33 | 148 | 45 | 8 | 95 | 317 |
| Fukuoka | 34,527 | 3,767 | 333 | 54 | 246 | 896 | 215 | 45 | 636 | 1,936 |
| Saga | 10,833 | 697 | 242 | 5 | 37 | 88 | 22 | 7 | 59 | 244 |
| Nagano | 12,421 | 644 | 153 | 23 | 73 | 200 | 65 | 9 | 126 | 483 |
| Kumamoto | 16,583 | 1,147 | 1,066 | 17 | 80 | 275 | 75 | 14 | 186 | 724 |
| Oita | 9,451 | 853 | 441 | 20 | 49 | 135 | 32 | 8 | 95 | 275 |
| Miyazaki | 15,876 | 2,676 | 311 | 19 | 42 | 193 | 59 | 11 | 123 | 449 |
| Kagoshima | 24,597 | 1,151 | 460 | 33 | 81 | 337 | 117 | 11 | 209 | 708 |
| Okinawa | 4,616 | 1,340 | 1,409 | 8 | 43 | 124 | 34 | 14 | 76 | 291 |
| Prefectural total | 1,035,581 | 112,797 | 53,844 | 1,563 | 6,309 | 19,701 | 4,416 | 1,439 | 13,846 | 44,443 |
| Sapporo City | 5,435 | 1,981 | 0 | 15 | 102 | 296 | 28 | 23 | 245 | 578 |
| Sendai City | 2,517 | 293 | 8 | 8 | 43 | 129 | 11 | 3 | 115 | 294 |
| Saitama City | 4,945 | 1,619 | 0 | 16 | 51 | 208 | 42 | 8 | 158 | 504 |
| Chiba City | 3,314 | 436 | 2 | 8 | 44 | 152 | 40 | 6 | 106 | 307 |
| Special wards | 14,535 | 7,615 | 0 | 70 | 622 | 1,818 | 152 | 153 | 1,513 | 3,599 |
| Yokohama City | 8,513 | 1,841 | 52 | 28 | 119 | 378 | 40 | 38 | 300 | 803 |
| Kawasaki City | 14,476 | 735 | 0 | 22 | 79 | 286 | 113 | 10 | 163 | 491 |
| Sagamihara City | 2,552 | 495 | 9 | 6 | 24 | 107 | 22 | 5 | 80 | 243 |
| Niigata City | 5,546 | 807 | 0 | 11 | 25 | 99 | 20 | 4 | 75 | 255 |
| Shizuoka City | 3,094 | 343 | 3 | 8 | 20 | 98 | 17 | 2 | 79 | 236 |
| Hamamatsu City | 5,685 | 1,261 | 19 | 5 | 29 | 108 | 20 | 5 | 83 | 281 |
| Nagoya City | 4,707 | 2,196 | 1 | 22 | 128 | 351 | 26 | 25 | 300 | 681 |
| Kyoto City | 4,777 | 1,087 | 5 | 6 | 60 | 186 | 16 | 19 | 151 | 343 |
| Osaka City | 4,802 | 3,148 | 0 | 27 | 149 | 733 | 67 | 33 | 633 | 1,257 |
| Sakai City | 2,320 | 558 | 0 | 8 | 31 | 144 | 22 | 14 | 108 | 328 |
| Kobe City | 3,329 | 607 | 14 | 25 | 71 | 274 | 46 | 30 | 198 | 513 |
| Okayama City | 4,041 | 325 | 7 | 14 | 31 | 86 | 21 | 9 | 56 | 212 |
| Hiroshima City | 5,138 | 1,733 | 7 | 19 | 62 | 190 | 29 | 11 | 150 | 403 |
| Kitakyushu City | 5,686 | 615 | 37 | 13 | 55 | 201 | 58 | 10 | 133 | 384 |
| Fukuoka City | 2,573 | 1,011 | 17 | 9 | 55 | 210 | 27 | 11 | 172 | 437 |
| Kumamoto City | 2,918 | 210 | 72 | 6 | 30 | 118 | 22 | 5 | 91 | 277 |
| 21 city total | 110,903 | 28,916 | 253 | 346 | 1,830 | 6,172 | 839 | 424 | 4,909 | 12,426 |

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

## Attachment 6 Extent of fire damage by prefecture (continued)

(During 2015) (Unit: 1,000 yen)

| Classification / Prefecture | Amount of damages | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Buildings | | | Forests | Vehicles | Ships | Aircraft | Other | Explosions |
| | | Subtotal | Buildings | Contents | | | | | | |
| Hokkaido | 3,160,829 | 2,791,671 | 1,843,082 | 948,589 | 2,340 | 133,318 | 11,445 | 37 | 208,309 | 13,709 |
| Aomori | 1,432,469 | 1,343,469 | 739,167 | 604,302 | 19,671 | 31,660 | 18,837 | 0 | 13,967 | 4,865 |
| Iwate | 1,346,928 | 1,169,112 | 759,206 | 409,906 | 53,712 | 32,307 | 0 | 0 | 84,109 | 7,688 |
| Miyagi | 1,079,466 | 1,017,540 | 765,154 | 252,386 | 2,651 | 42,075 | 989 | 0 | 15,636 | 575 |
| Akita | 1,351,620 | 1,176,736 | 918,901 | 257,835 | 28,309 | 29,766 | 107,047 | 0 | 8,558 | 1,204 |
| Yamagata | 1,653,127 | 1,624,127 | 997,043 | 627,084 | 2,854 | 14,870 | 0 | 0 | 11,276 | 0 |
| Fukushima | 1,623,495 | 1,401,234 | 1,103,781 | 297,453 | 6,699 | 49,211 | 0 | 0 | 158,740 | 7,611 |
| Ibaraki | 2,953,253 | 2,775,395 | 1,772,982 | 1,002,413 | 1,120 | 50,381 | 100 | 0 | 126,156 | 101 |
| Tochigi | 1,469,449 | 1,288,039 | 1,043,465 | 244,574 | 3,962 | 84,923 | 0 | 0 | 92,525 | 0 |
| Gunma | 1,534,207 | 1,452,497 | 1,133,803 | 318,694 | 959 | 61,293 | 0 | 0 | 18,788 | 670 |
| Saitama | 5,206,089 | 4,952,030 | 3,180,023 | 1,772,007 | 667 | 169,285 | 0 | 0 | 67,056 | 17,051 |
| Chiba | 10,839,717 | 10,109,140 | 2,631,115 | 7,478,025 | 866 | 93,068 | 78,617 | 319,243 | 215,699 | 23,084 |
| Tokyo | 3,980,046 | 3,664,569 | 2,659,975 | 1,004,594 | 0 | 97,228 | 21,891 | 15,220 | 146,827 | 34,311 |
| Kanagawa | 2,678,763 | 2,416,091 | 1,809,203 | 606,888 | 0 | 129,047 | 5,250 | 0 | 127,602 | 773 |
| Niigata | 2,036,696 | 1,885,561 | 1,392,755 | 492,806 | 65 | 135,872 | 309 | 0 | 11,849 | 3,040 |
| Tomiyama | 1,389,780 | 1,352,796 | 750,517 | 602,279 | 287 | 5,590 | 165 | 0 | 30,942 | 0 |
| Ishikawa | 342,892 | 331,455 | 274,283 | 57,172 | 2,388 | 6,611 | 41 | 0 | 2,397 | 0 |
| Fukui | 500,611 | 485,363 | 358,276 | 127,087 | 56 | 7,963 | 4 | 0 | 7,225 | 0 |
| Yamanashi | 644,155 | 570,621 | 462,186 | 108,435 | 2,281 | 49,258 | 0 | 0 | 14,951 | 7,044 |
| Nagano | 1,580,487 | 1,374,521 | 1,057,134 | 317,387 | 84,711 | 37,130 | 0 | 0 | 60,767 | 23,358 |
| Gifu | 3,451,158 | 3,372,573 | 1,652,588 | 1,719,985 | 92 | 41,996 | 0 | 0 | 36,238 | 259 |
| Shizuoka | 3,562,978 | 2,627,671 | 1,436,783 | 1,190,888 | 1,960 | 83,240 | 13,953 | 0 | 831,348 | 4,806 |
| Aichi | 3,027,384 | 2,751,204 | 1,989,917 | 761,287 | 0 | 117,734 | 27,397 | 0 | 128,184 | 2,865 |
| Mie | 1,799,791 | 1,566,635 | 1,227,612 | 339,023 | 196 | 57,453 | 266 | 130,000 | 45,241 | 0 |
| Shiga | 812,021 | 721,510 | 547,410 | 174,100 | 1 | 29,329 | 72 | 0 | 61,109 | 0 |
| Kyoto | 799,532 | 754,168 | 546,476 | 207,692 | 0 | 9,601 | 60 | 0 | 13,130 | 22,573 |
| Osaka | 3,241,184 | 3,083,229 | 2,126,238 | 956,991 | 38 | 109,265 | 25 | 0 | 47,590 | 1,037 |
| Hyogo | 2,842,762 | 2,672,228 | 1,834,030 | 838,198 | 676 | 55,668 | 48,487 | 0 | 63,121 | 2,582 |
| Nara | 652,617 | 617,188 | 445,127 | 172,061 | 206 | 25,121 | 0 | 0 | 10,102 | 0 |
| Wakayama | 623,579 | 598,400 | 476,262 | 122,138 | 1,266 | 8,925 | 0 | 0 | 14,988 | 0 |
| Tottori | 414,648 | 407,033 | 295,530 | 111,503 | 30 | 6,075 | 440 | 0 | 1,037 | 33 |
| Shimane | 542,319 | 530,264 | 404,985 | 125,279 | 71 | 5,835 | 0 | 0 | 2,246 | 3,903 |
| Okayama | 1,332,188 | 1,287,676 | 780,358 | 507,318 | 771 | 28,722 | 1,623 | 0 | 10,596 | 2,800 |
| Hiroshima | 2,013,678 | 1,952,583 | 1,192,830 | 759,753 | 604 | 25,406 | 22,486 | 0 | 12,577 | 22 |
| Yamaguchi | 952,962 | 838,693 | 605,768 | 232,925 | 761 | 55,267 | 2,515 | 0 | 55,726 | 0 |
| Tokushima | 498,678 | 464,424 | 399,805 | 64,619 | 22,699 | 5,993 | 50 | 0 | 5,512 | 0 |
| Kagawa | 702,789 | 650,815 | 450,565 | 200,250 | 17 | 3,846 | 41,618 | 0 | 6,491 | 2 |
| Ehime | 697,130 | 626,980 | 376,659 | 250,321 | 778 | 8,529 | 39,685 | 0 | 21,148 | 10 |
| Kochi | 665,949 | 560,360 | 477,472 | 82,888 | 197 | 9,659 | 81,279 | 0 | 14,454 | 0 |
| Fukuoka | 2,732,761 | 2,590,483 | 1,686,092 | 904,391 | 949 | 68,137 | 18,782 | 0 | 53,396 | 1,014 |
| Saga | 437,192 | 411,842 | 290,818 | 121,024 | 691 | 15,907 | 0 | 0 | 8,752 | 0 |
| Nagano | 570,451 | 518,883 | 428,487 | 90,396 | 79 | 16,200 | 25,235 | 0 | 9,482 | 572 |
| Kumamoto | 766,788 | 549,093 | 398,287 | 150,806 | 3,978 | 22,665 | 155 | 31,692 | 159,205 | 0 |
| Oita | 417,449 | 387,279 | 291,410 | 95,869 | 1,470 | 16,969 | 2,411 | 0 | 8,053 | 1,267 |
| Miyazaki | 728,508 | 671,289 | 481,944 | 189,345 | 2,967 | 39,677 | 160 | 0 | 11,429 | 2,986 |
| Kagoshima | 1,062,327 | 1,013,541 | 616,376 | 397,165 | 926 | 26,118 | 6,961 | 0 | 13,975 | 806 |
| Okinawa | 367,577 | 345,856 | 253,997 | 91,859 | 0 | 10,593 | 410 | 0 | 10,718 | 0 |
| Prefectural total | 82,520,479 | 75,753,867 | 47,365,877 | 28,387,990 | 255,021 | 2,164,786 | 578,765 | 496,192 | 3,079,227 | 192,621 |
| Sapporo City | 336,562 | 321,990 | 250,068 | 71,922 | 0 | 9,034 | 0 | 0 | 2,972 | 2,566 |
| Sendai City | 178,259 | 169,970 | 152,085 | 17,885 | 0 | 6,820 | 0 | 0 | 1,469 | 0 |
| Saitama City | 624,076 | 597,659 | 373,775 | 223,884 | 0 | 11,266 | 0 | 0 | 1,517 | 13,634 |
| Chiba City | 349,203 | 290,931 | 193,024 | 97,907 | 0 | 34,908 | 0 | 0 | 1,244 | 22,120 |
| Special wards | 3,155,149 | 2,920,374 | 2,137,048 | 783,326 | 0 | 71,252 | 21,891 | 220 | 115,401 | 26,011 |
| Yokohama City | 825,381 | 769,854 | 568,256 | 201,598 | 0 | 31,340 | 1,950 | 0 | 22,201 | 36 |
| Kawasaki City | 341,727 | 301,137 | 216,857 | 84,280 | 0 | 36,070 | 3,000 | 0 | 1,520 | 0 |
| Sagamihara City | 294,288 | 285,502 | 240,870 | 44,632 | 0 | 7,700 | 0 | 0 | 954 | 132 |
| Niigata City | 284,971 | 269,605 | 223,521 | 46,084 | 0 | 10,157 | 309 | 0 | 1,920 | 2,980 |
| Shizuoka City | 454,895 | 413,676 | 249,790 | 163,886 | 120 | 37,899 | 0 | 0 | 3,200 | 0 |
| Hamamatsu City | 501,675 | 451,967 | 271,799 | 180,168 | 160 | 18,335 | 0 | 0 | 31,213 | 0 |
| Nagoya City | 318,083 | 306,143 | 226,394 | 79,749 | 0 | 8,102 | 0 | 0 | 3,838 | 0 |
| Kyoto City | 289,479 | 284,704 | 179,223 | 105,481 | 0 | 4,239 | 0 | 0 | 491 | 45 |
| Osaka City | 427,083 | 385,657 | 221,317 | 164,340 | 0 | 28,751 | 25 | 0 | 12,590 | 60 |
| Sakai City | 233,327 | 225,576 | 114,637 | 110,939 | 0 | 6,789 | 0 | 0 | 962 | 0 |
| Kobe City | 395,677 | 371,164 | 302,995 | 68,169 | 0 | 15,634 | 5,607 | 0 | 2,998 | 274 |
| Okayama City | 400,334 | 386,326 | 193,237 | 193,089 | 0 | 6,356 | 0 | 0 | 7,652 | 0 |
| Hiroshima City | 439,205 | 431,171 | 277,739 | 153,432 | 0 | 6,652 | 0 | 0 | 1,379 | 3 |
| Kitakyushu City | 377,035 | 349,758 | 264,594 | 85,164 | 0 | 12,002 | 2,700 | 0 | 12,362 | 213 |
| Fukuoka City | 183,300 | 152,845 | 106,257 | 46,588 | 14 | 5,892 | 0 | 0 | 24,549 | 0 |
| Kumamoto City | 88,171 | 77,124 | 58,627 | 18,497 | 108 | 7,564 | 0 | 0 | 3,375 | 0 |
| 21 city total | 10,497,880 | 9,763,133 | 6,822,113 | 2,941,020 | 402 | 376,762 | 35,482 | 220 | 253,807 | 68,074 |

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

## Attachment 32 Trends in the number of firefighting agencies and volunteer firefighter

(As of April 1 of each year)

| Year \ Category | Fire defense headquarters | | | | | Volunteer fire corps | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Fire defense headquarters | Unions among these | Fire departments | Branch offices | Firefighters | Volunteer fire corps | Divisions | Standing volunteer fire corps | Volunteer firefighters |
| 1956 | 383 | 6 | 465 | 713 | 31,864 | 5,332 | - | 101 | 1,830,222 |
| 1957 | 406 | 6 | 488 | 735 | 32,745 | 4,484 | - | 107 | 1,737,319 |
| 1958 | 429 | 6 | 507 | 778 | 33,729 | 4,304 | - | 104 | 1,677,555 |
| 1959 | 438 | 6 | 533 | 831 | 35,168 | 4,153 | - | 93 | 1,633,792 |
| 1960 | 445 | 3 | 562 | 833 | 36,627 | 4,016 | - | 102 | 1,591,053 |
| 1961 | 461 | 3 | 578 | 889 | 38,489 | 3,957 | 35,463 | 96 | 1,542,406 |
| 1962 | 484 | 3 | 597 | 919 | 40,948 | 3,909 | 35,377 | 100 | 1,488,495 |
| 1963 | 511 | 3 | 617 | 961 | 43,169 | 3,852 | 34,323 | 116 | 1,445,508 |
| 1964 | 544 | 4 | 641 | 996 | 45,357 | 3,835 | 33,825 | 117 | 1,413,285 |
| 1965 | 620 | 4 | 735 | 1,024 | 48,075 | 3,826 | 31,653 | 123 | 1,330,995 |
| 1966 | 640 | 4 | 755 | 1,072 | 50,806 | 3,818 | 30,940 | 125 | 1,301,702 |
| 1967 | 671 | 5 | 817 | 1,110 | 53,957 | 3,764 | 29,926 | 107 | 1,283,003 |
| 1968 | 700 | 9 | 851 | 1,155 | 56,681 | 3,748 | 29,451 | 94 | 1,258,277 |
| 1969 | 734 | 26 | 892 | 1,242 | 60,486 | 3,743 | 28,998 | 89 | 1,234,696 |
| 1970 | 756 | 58 | 937 | 1,308 | 64,230 | 3,699 | 28,482 | 71 | 1,210,839 |
| 1971 | 782 | 129 | 986 | 1,470 | 70,077 | 3,682 | 27,732 | 61 | 1,189,675 |
| 1972 | 805 | 221 | 1,094 | 1,769 | 79,092 | 3,659 | 27,638 | 23 | 1,166,625 |
| 1973 | 829 | 304 | 1,155 | 2,120 | 88,754 | 3,696 | 27,392 | 25 | 1,148,567 |
| 1974 | 848 | 359 | 1,230 | 2,407 | 98,329 | 3,682 | 27,081 | 22 | 1,131,723 |
| 1975 | 859 | 378 | 1,258 | 2,590 | 105,005 | 3,668 | 26,805 | 22 | 1,118,036 |
| 1976 | 869 | 387 | 1,286 | 2,665 | 107,632 | 3,673 | 26,650 | 22 | 1,105,299 |
| 1977 | 878 | 398 | 1,321 | 2,742 | 110,618 | 3,669 | 26,463 | 17 | 1,094,367 |
| 1978 | 887 | 408 | 1,336 | 2,771 | 114,249 | 3,669 | 26,324 | 18 | 1,087,269 |
| 1979 | 895 | 419 | 1,366 | 2,840 | 117,657 | 3,666 | 26,281 | 12 | 1,078,536 |
| 1980 | 906 | 427 | 1,425 | 2,883 | 120,460 | 3,641 | 26,084 | 11 | 1,069,140 |
| 1981 | 914 | 435 | 1,462 | 2,930 | 123,204 | 3,645 | 25,995 | 11 | 1,063,761 |
| 1982 | 923 | 441 | 1,470 | 3,001 | 125,335 | 3,656 | 26,115 | 9 | 1,057,404 |
| 1983 | 927 | 445 | 1,476 | 3,063 | 126,959 | 3,653 | 26,002 | 8 | 1,050,271 |
| 1984 | 932 | 451 | 1,483 | 3,111 | 128,087 | 3,658 | 25,858 | 8 | 1,042,463 |
| 1985 | 933 | 454 | 1,496 | 3,132 | 128,914 | 3,641 | 25,798 | 7 | 1,033,376 |
| 1986 | 933 | 454 | 1,501 | 3,151 | 129,610 | 3,650 | 25,701 | 7 | 1,026,224 |
| 1987 | 931 | 455 | 1,514 | 3,152 | 130,463 | 3,648 | 25,667 | 7 | 1,017,807 |
| 1988 | 930 | 456 | 1,526 | 3,170 | 131,407 | 3,649 | 25,606 | 6 | 1,008,998 |
| 1989 | 931 | 458 | 1,535 | 3,160 | 132,437 | 3,649 | 25,620 | 6 | 1,002,371 |
| 1990 | 933 | 464 | 1,554 | 3,166 | 133,610 | 3,654 | 25,639 | 6 | 996,743 |
| 1991 | 935 | 468 | 1,589 | 3,175 | 135,157 | 3,648 | 25,559 | 2 | 991,566 |
| 1992 | 935 | 467 | 1,602 | 3,181 | 137,388 | 3,642 | 25,574 | 1 | 986,996 |
| 1993 | 932 | 466 | 1,618 | 3,200 | 141,403 | 3,642 | 25,575 | 1 | 983,014 |
| 1994 | 931 | 465 | 1,615 | 3,207 | 144,885 | 3,641 | 25,561 | 1 | 979,737 |
| 1995 | 931 | 467 | 1,631 | 3,207 | 147,016 | 3,637 | 25,506 | - | 975,512 |
| 1996 | 925 | 470 | 1,636 | 3,219 | 148,989 | 3,636 | 25,480 | - | 972,078 |
| 1997 | 923 | 471 | 1,654 | 3,224 | 150,626 | 3,641 | 25,455 | - | 968,081 |
| 1998 | 920 | 473 | 1,662 | 3,232 | 151,703 | 3,643 | 25,393 | - | 962,625 |
| 1999 | 911 | 473 | 1,670 | 3,239 | 152,464 | 3,641 | 25,351 | - | 957,047 |
| 2000 | 907 | 472 | 1,682 | 3,230 | 153,439 | 3,639 | 25,322 | - | 951,069 |
| 2001 | 904 | 475 | 1,687 | 3,225 | 153,952 | 3,636 | 25,268 | - | 944,134 |
| 2002 | 900 | 475 | 1,690 | 3,226 | 154,487 | 3,627 | 25,238 | - | 937,169 |
| 2003 | 894 | 472 | 1,696 | 3,207 | 155,016 | 3,598 | 25,064 | - | 928,432 |
| 2004 | 886 | 459 | 1,699 | 3,207 | 155,524 | 3,524 | 24,852 | - | 919,105 |
| 2005 | 848 | 385 | 1,704 | 3,225 | 156,082 | 2,963 | 24,384 | - | 908,043 |
| 2006 | 811 | 329 | 1,706 | 3,221 | 156,758 | 2,584 | 23,946 | - | 900,007 |
| 2007 | 807 | 320 | 1,705 | 3,230 | 157,396 | 2,474 | 23,605 | - | 892,893 |
| 2008 | 807 | 316 | 1,706 | 3,218 | 157,860 | 2,380 | 23,180 | - | 888,900 |
| 2009 | 803 | 312 | 1,710 | 3,197 | 158,327 | 2,336 | 22,997 | - | 885,394 |
| 2010 | 802 | 305 | 1,716 | 3,180 | 158,809 | 2,275 | 22,926 | - | 883,698 |
| 2011 | 798 | 303 | 1,711 | 3,186 | 159,354 | 2,263 | 22,839 | - | 879,978 |
| 2012 | 791 | 305 | 1,706 | 3,184 | 159,730 | 2,234 | 22,753 | - | 874,193 |
| 2013 | 770 | 304 | 1,700 | 3,162 | 160,392 | 2,224 | 22,578 | - | 868,872 |
| 2014 | 752 | 296 | 1,703 | 3,153 | 161,244 | 2,221 | 22,560 | - | 864,347 |
| 2015 | 750 | 295 | 1,709 | 3,145 | 162,124 | 2,208 | 22,549 | - | 859,995 |
| 2016 | 733 | 291 | 1,714 | 3,130 | 163,043 | 2,211 | 22,484 | - | 856,278 |

(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.

## Attachment 34 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 | Under ground storage facilities | Simple tank storage facilities | Transfer tank storage facilities | Outdoor storage facilities | Subtotal | Fuel supply depots | Class I sales handling facilities | Class II 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 |

(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 Fire Defense Headquarters of Rikuzentakata City of Iwate Prefecture and the Fire Defense Headquarters of the Inter-municipal Association of the Futaba Region in Fukushima Prefecture were calculated based on the numbers at the time of last fiscal year's survey (as of March 31, 2010).