

The 70-Year History of the Municipal Fire Service

Kyoichi Kobayashi, Professor of the Research Institute for Science & Technology, Tokyo University of Science



Introduction

In 2018, the municipal fire service system will mark its 70th anniversary. On this occasion, I was asked to review and summarize the 70-year history of the municipal fire service. Although it is difficult to cover the complete 70-year history of the fire service in this limited space, I thought I would provide an overview of the 70 years by roughly dividing them into the following four periods:

- First period: The early days of the municipal fire service (1948 up to 1959),
- Second period: From the period of rapid economic growth to the oil crisis (until around 1973),
- Third period: From the period of stable growth to the Great Hanshin-Awaji Earthquake (until around 1995), and
- Fourth period: Arrival of the aging society and enhancement of crisis-management systems (up until now).

1. The early days of the municipal fire service

1.1 Fire service system reform by GHQ

After the war defeat in 1945, major earthquakes occurred including the 1946 Nankaido earthquake (with 1,432 fatalities) and the 1948 Fukui earthquake (with 3,858 dead or missing persons), and conflagrations (fires with a burned area of 33,000 square meters or more) with hundreds or thousands of buildings burned occurred four times in 1946 and five times in 1947. Thus, disorder continued.¹

At that time, fire services were part of the police administration. The Supreme Commander for the Allied Powers or GHQ promoted various system reforms to move the democratization of Japan forward, one of which was taking the initiative to reform the fire service system. This reform was welcomed by those who had devoted professional attention to fire services since before the war. Through cooperation with these Japanese firefighting personnel, the GHQ staff worked sincerely from the perspective of “how to reduce damage from fires,” and played a leading role in creating the framework for the new fire service system.²

1.2 Enactment of the Fire and Disaster Management Organization Act and the Fire Services Act

The Fire and Disaster Management Organization Act, enacted in December 1947, clarified municipal responsibility for the fire service, and set up the National Fire Defense Agency under the National Public Safety Commission as a national organization, clarifying the independence of the municipal fire service.

Because conflagrations in urban districts were the biggest challenge for the fire services at that time among the affairs under the jurisdiction of the National Fire Defense Agency, this law prioritized the “grading of urban districts,” and put the National Research Institute of Fire and Disaster, which conducts research on overseas fire service systems and fire science, at the center of the national organization, aiming to devote the role of the national government to supporting the municipal fire service.

Along with the inauguration of the municipal fire service, the Japan Firefighters Association was established in January 1948, the National Liaison Council of City Fire Chiefs (renamed Fire Chiefs’ Association of Japan in May 1961) was established in May 1949, and the Federation of Diet Members for Fire Services was established in March 1950, all as nationwide organizations. They later came to contribute to the development of the municipal fire service from their own standpoints.²

The slogans of the municipal fire service in the early days were “Preventive fire service” (focus on fire

prevention) and “Scientific fire service” (scientific improvement of fire and disaster prevention systems). The biggest feature of the Fire Services Act, enacted in July 1948, was the strong powers given to fire chiefs and fire station chiefs, including implementation directives for fire prevention measures, onsite inspections, building approvals, and fire investigations.

Particularly, the power to approve buildings was established based on the wishes of GHQ over the strong objections of other ministries and agencies, which became a remaining valuable asset for the fire services.²

1.3 A series of conflagrations in urban districts and transition to the National Fire Defense Agency, the Ministry of Home Affairs

In 1945-64, the biggest challenge for the fire services was a series of conflagrations in urban districts. To eliminate these conflagrations in urban districts, firefighting capabilities needed to be urgently strengthened, especially the promotion of mechanization. This was why the “Standards for permanent firefighting capabilities” were set up in 1949 and the “Standards for equipment and operation of volunteer fire corps” were set up in 1952. However, the financial strength of both of the national government and the municipalities at that time were too poor to properly promote these improvements.² Therefore, in 1953, the Act on Promotion of Reinforcement of Disaster Management Facilities was enacted which established the government’s subsidy program.

In addition, in order to enhance municipal firefighting capabilities, it was important to increase the municipality’s financial resources for firefighting, and since fire service administration was largely related to general administration, the National Fire Defense Headquarters became the Fire and Disaster Management Agency (FDMA) as an affiliated agency of the Ministry of Home Affairs when the Ministry was set up in 1960.

Through these measures, the capabilities of the municipal fire service were steadily strengthened.

2. From the period of rapid economic growth to the oil crisis

2.1 Enhancement of hazardous materials regulations and firefighting equipment regulations

In the late 1950s, the period of rapid economic growth began, which was when the disadvantages of varying regulations in different municipalities based on the Fire Services Act became gradually obvious.

Therefore, in 1959, hazardous materials regulations, which had been left up to municipal ordinance, were changed to national unified regulations, and the enforcement of these regulations came to be entrusted to the municipalities as an assigned function.³

Also concerning firefighting equipment regulations, in 1960, technical standards for firefighting equipment, which had previously been set by municipal ordinance, came to be set by cabinet order, and installation of the firefighting equipment required according to the purpose, size, structure, etc. of fire prevention properties became mandatory in a nationally unified manner. At the same time, the fire protection manager system was also revised, with basic schemes for fire prevention measures for buildings, etc. in the current Fire Services Act being put on the table both from a constructive and a non-constructive side.

2.2 Improvement of fire service systems and the ambulance service system

Firefighting capabilities were regarded as something to be improved by the municipalities, while it was necessary to improve firefighting capabilities nationally to a consistent level. So, in 1961, the “Standards for firefighting capabilities” were announced by the Commissioner of the FDMA.

These standards had the primary purpose of preventing conflagrations in urban districts and aimed to start firefighting within eight minutes of the fire outbreak, and to extinguish a fire which had broken out at a wooden building in an urban district before it spread to other buildings. Later, after a series of building fires and a rapid increase in high-rise buildings, more revisions were implemented.³

At first, the ambulance service was not defined as a fire service, but the number of municipalities providing a virtual ambulance service increased, so the Fire Services Act was revised in 1963 to regard the ambulance service officially as a service of the fire service organizations.

Through strengthening the hazardous materials regulations and the firefighting equipment regulations as well as establishing the ambulance service, the number of services implemented by the fire service organizations increased. On the other hand, in light of the emergence of facilities at risk of catastrophe such as petroleum industrial complexes and the experience of wide-area major disasters such as Isewan Typhoon or Typhoon Vera in 1959 (with 5,098 dead or missing persons), the Basic Act on Disaster Control Measures was enacted in 1961. When the roles and responsibilities of the fire services in the event of a major disaster were clarified in this law, some small municipalities found it difficult to fully implement all the fire services required.

Therefore, in 1971, a full-fledged revision to the designation by ordinance for regular fire services was made so that if two or more municipalities set up a special district authority for fire services as part of a large municipal area project, then this authority came to be preferentially designated by ordinance for regular fire services. As a result, widening of the fire services was promoted, and the number of these special district authorities for fire services reached more than half the number of fire departments.²

2.3 Extension of buildings with higher above-ground areas and deeper underground areas, and strengthening of fire service laws and regulations

From 1960, backed by progress in economic development and building technology, movements toward the construction of high-rise buildings and underground malls began. Starting with construction of the Kasumigaseki Building in 1968, such buildings potentially at high risk of fire came to be built one after another. On the other hand, around that time, a series of fires with many fatalities occurred at a multitenant building, hotel, hospital and clinic, so improvements in laws and regulations on building standards or fire services were also made one after another.

Despite this series of improvements, the Sennichi Department Store Building fire (with 118 fatalities) in 1972 in Osaka and the 1973 Taiyo Department Store fire (with 100 fatalities) in Kumamoto occurred, so the FDMA decided to make major changes to the Fire Services Act in 1974, including a new retroactively applicable provision on firefighting equipment for specified fire prevention properties, a system of installation inspection of firefighting equipment by fire service organizations, and a regular inspection and reporting system for firefighting equipment. This revision made the strengthened fire service laws and regulations also effective retroactively for old buildings, which is viewed as a landmark revision in the history of fire prevention law in Japan.

2.4 Rapid increase in petroleum industrial complexes and the 1964 Niigata earthquake

Over the course of rapid economic growth and energy transformation, from 1955-1969, huge petroleum industrial complexes were built one after another in coastal areas in various parts of Japan, and the consumption of petroleum and the number of facilities handling hazardous materials rapidly increased.

With this increase, fires or explosions with many fatalities at industrial facilities also occurred frequently. Triggered by this series of accidents in 1964: the propylene oxide explosion at Showa Denko KK Kawasaki Plant (with 15 fatalities), the crude oil tank burning accident at Niigata Refinery, Showa Shell Sekiyu K.K. due to the 1964 Niigata earthquake, and the organic peroxide explosion at the Katsushima warehouse of Takaragumi Co., Ltd. (with 19 fallen firefighters or volunteer firefighters), hazardous materials regulations were significantly revised and strengthened.

In addition, triggered by the large-scale heavy oil spillage accident at Mizushima Refinery, Mitsubishi Oil Co., Ltd. in Kurashiki in 1974, the Act on the Prevention of Disaster in Petroleum Industrial Complexes and Other Petroleum Facilities was enacted, the Hazardous Materials Safety Techniques Association was set up in 1976, and the structural standards for outdoor storage tanks, etc. were significantly strengthened in 1977. In this way, regulations for facilities handling hazardous materials came to be drastically revised or strengthened.

3. From the period of stable growth to the Great Hanshin-Awaji Earthquake

3.1 Decrease in major accidents and enhancement of preventive regulations

In 1973, the oil crisis marked the end of the rapid growth period. That pivotal year in present-day Japan also became the era's turning point for the occurrence of accidents including fires.

For example, the number of fires continued to increase after the war defeat until 1973 but peaked in 1973 to become flat or turn downward. Building fires with tens of victims also disappeared for a while after the 1973 Taiyo Department Store fire, which reveals that the series of improvements in building standards or fire service laws and regulations since 1965 had finally worked well.

Since 1980, a series of fires which caused a great deal of damage reoccurred at hotels: the Kawaji Prince Hotel fire in Tochigi in 1980 (with 45 fatalities), the Hotel New Japan fire in Tokyo in 1982 (with 33 fatalities), etc. Many fatalities in these fires were caused by legal violations or flaws in fire prevention management rather than flaws in fire prevention laws and regulations. Because of this, measures including the creation of the Fire Safety Certification Mark system (in May 1981) and the strengthening of systems to deal with breaches were taken, while fire prevention laws and regulations were not strengthened any further.

In addition to fires at hotels, a fire caused by a gas explosion at the Golden Underground Mall in Shizuoka in 1980 (with 14 fatalities), a fire at the special elderly nursing home Shojuen in Higashimurayama, Tokyo in 1987 (with 17 fatalities), and a fire at the supermarket Nagasakiya in Amagasaki in 1990 (with 15 fatalities) occurred, which resulted in strengthened measures against gas explosion accidents and safety measures for semi-underground malls as well as strengthened installation regulations for sprinkler systems.

These strengthened regulations worked so well that there was no fire with more than ten fatalities for the following ten years. However, in 2001, a fire at a small multitenant building in Kabukicho, Shinjuku (with 44 fatalities) occurred, when regulations were strengthened focusing on the thorough rectification of breaches and the promotion of voluntary fire prevention and safety. After that, a series of fires occurred at small multitenant buildings, and technical standards were revised accordingly as needed.

Meanwhile, at facilities which handle hazardous materials, because of the effects of the regulations being strengthened in series from 1965-1978 and promotion of the businesses' own safety measures, based on the stable development of the Japanese economy, the number of accidents steadily decreased from around 1975-1990.

3.2 Progress of ambulance service administration

With the change in people's awareness, transformation of communities, changes in medical contexts, etc. the workload of the ambulance service, recently incorporated into the fire services, rapidly increased among the fire services in terms of quality and quantity.

Particularly there was an increasing need to enhance the first aid provided by ambulance staff on the way to hospital and so the "Standards for first aid, etc. provided by ambulance staff" were set up in 1978, and the Emergency Life-Saving Technician Act was enacted in 1991 to allow those ambulance staff certified as emergency life-saving technicians to provide advanced first aid to a sick or wounded person suffering cardiopulmonary arrest. Also after that, the range of first aid, etc. that can be provided by ambulance staff has been steadily expanded.⁴

3.3 Development of the International Rescue Team of Japanese Fire-Service

When Japan's economic power started attracting worldwide attention, the need arose to provide international contributions commensurate with its new level of economic power. Triggered by an argument about the response to a mudflow disaster caused by the eruption of the Nevado del Ruiz volcano in Columbia in 1985, the International Rescue Team of Japanese Fire-Service (IRT-JF), consisting of fire rescue workers from all across the country, was developed in 1986. In light of the results of being dispatched to the earthquake disaster in El Salvador in October 1986, the Act concerning Dispatch of Japan

Disaster Relief Team was enacted in 1987. Since then, IRT-JF came to be dispatched as a rescue team of Japan Disaster Relief Team, based on the Act, and has now been dispatched 18 times, from the earthquake in Iran in 1990 to the earthquake in Mexico in 2017.^{1/4}

3.4 The Great Hanshin-Awaji Earthquake and the establishment of emergency fire response teams

The Great Hanshin-Awaji Earthquake in 1995 resulted in a catastrophe that caused 6,434 fatalities and damage to 640,000 houses.¹ In order to extinguish fires and rescue victims trapped under collapsed buildings in the disaster area, a lot of support teams from fire departments all across the country rushed to the area. In light of experience from this disaster, emergency fire response teams were established in the same year as a prompt mutual support system between fire departments nationwide.

In addition, triggered by the Earthquake, information networks on fire and disaster prevention, including the fire and disaster prevention radio network, the prefectural or municipal disaster management radio communication network, the regional satellite communication network, and the image transmission system, came to be systematically developed.⁴

4. Arrival of the aging society and enhancement of crisis-management systems

4.1 Improvement and reinforcement of wide-area support systems and the Great East Japan Earthquake

Entering the 21st century, with ongoing terrorism worldwide and the tense situation in East Asia, Japan also promoted improvement of national emergency legislation. As part of this, in 2004, the Act concerning Measures for the Protection of People in Armed Attack Situations, etc. (Civil Protection Act) was established, and the FDMA came to play a key role in mutual cooperation between the national government and local governments in situations of civil protection in emergencies. In 2005, the Civil Protection and Disaster Management Department was set up within the FDMA.

The Civil Protection Act also provides that fire services have to protect citizens' life, limb and property from fires caused by armed attacks as well as prevent and mitigate armed attack disasters. So, at the same time as the enactment of the Civil Protection Act, the Fire and Disaster Management Organization Act was also revised to formally include the emergency fire response teams in the Act. This revision emphasized that reinforcement of the emergency fire response teams was now ensured as was the maintenance and improvement of their equipment, from the viewpoint of civil protection.

Therefore, it was decided to further develop special advanced rescue forces and advanced rescue forces, consisting of expertly and highly trained rescue workers. It was also decided to deploy vehicles and equipment to respond to large-scale disasters or NBC disasters at major fire departments across the country, based on Article 50 of the Fire and Disaster Management Organization Act (Free Use of National Property, etc.).⁴

For prompt and appropriate evacuation of residents in the event of a large-scale disaster, armed attack, etc., it is important to promptly transmit accurate information to the residents. Therefore, the FDMA started to promote improvements to J-ALERT (a nationwide instantaneous alert system) in cooperation with local governments in 2007, and introduced a Safety Information System in 2008 which made it possible to confirm safety information of possible victims, which was used for the first time in the Great East Japan Earthquake (described below).^{1/4}

In addition, it was stipulated that the Minister of Internal Affairs and Communications shall formulate a "Plan on fundamental matters concerning the organization of emergency fire response teams and improvement of facilities" (Basic Plan), and the subsidy rate for improvement of facilities based on the Basic Plan shall be 50%.

In parallel with such legislation, in 2003, the Fire, Disaster and Risk Management Center was set up within the FDMA, and the operation system of the emergency fire response teams was tremendously improved.

The Great East Japan Earthquake (magnitude 9.0) and the associated tsunami in 2011 caused unprecedented and immense damage including 22,152 dead or missing persons and 121,776 damaged houses.

On the request of the Commissioner of the FDMA, fire departments all across the country dispatched emergency fire response teams to promptly conduct large-scale support activities. These teams made an extremely valuable contribution to rescue activities in the disaster area. Their activities could not have been conducted without the wide-area support system, which had been steadily developed since the Great Hanshin-Awaji Earthquake.

4.2 Enhancement of regular firefighting capabilities

In most cases, smaller fire departments have their own challenges when it comes to taking measures regarding organization management or fiscal administration such as their limited abilities to respond to complicated or diversified disasters, or to introduce advanced equipment, or to develop human resources with expertise. So, it would be necessary to enhance their firefighting capabilities through wider cooperation between the municipalities. Therefore, based on the Fire and Disaster Management Organization Act, which was revised in 2006, “Basic guidelines for widening of the municipal fire service” were set up in the same year.

Fire and ambulance service radio, which had been operated in analog format, was decided to switchover to digital by the end of May 2016 when criteria for the Radio Act (Directive from the Ministry of Internal Affairs and Communications) were revised in 2003. As a result, fire departments completed this digitalization on time, taking renewal timing of radio equipment into consideration.¹ This digitalization was a quite difficult, large project, but an information infrastructure for fire and disaster prevention could be developed with the rapid progress in IoT and with the AI era also expected to arrive.

4.3 Enhancement of volunteer fire corps

Volunteer fire corps play a growing role in ensuring the safety of local residents as the center of fire and disaster prevention systems in the local community. In the Great East Japan Earthquake, volunteer fire corps members in the disaster area, though also victims, devoted themselves to a wide range of activities including closing floodgates, providing evacuation guidance to residents, rescues, firefighting, evacuation center operation and support, and searching for missing persons. On the other hand, it is a matter of the greatest regret that 254 volunteer fire corps members engaging in these activities died or went missing due to the tsunami.

Affected by the changing social environment, most volunteer fire corps across the country now face challenges including a decrease in members, an increase in employees, and a rise in the average age. Therefore, the Act on Enhancing and Strengthening Regional Disaster Prevention Capabilities Centered around Volunteer Fire Corps (Volunteer Fire Corps Enhancement Act) was enacted in 2013.

This law was enacted to ensure regional disaster prevention capabilities, centered around volunteer fire corps, were enhanced and to contribute to the safety of residents, in view of the following factors: repeated disasters including earthquakes such as the Great East Japan Earthquake and localized torrential rain, regional disaster prevention capabilities to protect the life, limb and property of residents from disasters have grown in importance, while changes in socioeconomic circumstances including the aging society and lower birthrate, increase in employees, and increase in residents commuting out of the local area, it has become difficult to ensure leaders for disaster prevention activities available in local communities.

4.4 Fire prevention measures in an aging society

With the rapid increase in the elderly, the number of fatalities from house fires was expected to rapidly increase. Therefore, in 1991, the Commissioner of the FDMA formulated the “Basic policy on promotion of fire prevention measures for houses,” and a national movement campaign to promote the installation of home fire alarms, the safe use of fire equipment, popularization of flame-proof futons, etc. began aiming to reduce the number of fatalities from house fires in ten years to fewer than half the expected number.

This movement did achieve certain results but it was centered on campaigns, which meant that it could achieve only about half the reduction target of the number of fatalities from house fires, and with the march

toward an aging society, a trend toward a rapid increase in this number was seen since 2002. Therefore, the Fire Services Act was revised in 2004, and the installation of home fire alarms became mandatory in general houses as well.

The effects of the various fire prevention measures for houses, which until then had been limited, became statistically more prominent with the mandatory installation of home fire alarms. In the ten years after installation became mandatory, the number of fatalities from house fires decreased by as much as 20%. In addition, with fire alarms installed, there are more instances of fires being detected and extinguished before a minor fire becomes a major fire. Therefore, the number of fires reported to the fire departments decreased with the rate of house fires during the same period decreasing by 30% when combined with other causes.

Moreover, after enforcement of the Long-Term Care Insurance Act in 2000, welfare facilities for the elderly were diversified and the number of small facilities increased. Since fires at small group homes started to claim many victims, the installation of sprinkler systems also became mandatory at small facilities. Triggered by a fire at a welfare facility in Nagasaki in 2013 (with five fatalities), it was decided to install sprinkler systems at this type of facility in principle, irrespective of the total area. A fire at an orthopedic clinic in Fukuoka in the same year (with ten fatalities) revealed that the risk of fire in a clinic with beds was as high as a small social welfare facility. Therefore, it was similarly decided to mandate the installation of sprinkler systems, etc., irrespective of the total area (in 2014).

Conclusion

We now live in a society with intensifying super-aging, low birthrate and depopulation. Some fear that some municipalities may even collapse in the near future. On the other hand, numbers of foreign workers and foreign tourists have been increasing dramatically, and new challenges for disaster countermeasures have been emerging before the Tokyo 2020 Olympic and Paralympic Games.

The municipal fire service system, as seen in its history from the first period to the fourth period, has developed steadily, meeting the needs of the times over the 70 years after its establishment. From now on, the time is coming when we will need to combine all our wisdom to protect people's safety from the challenges above.

[References]

- 1) The 2017 White Paper on the Fire Service
- 2) Hundred Years' History of Fire Services in Japan
- 3) Realities of Fires and the Current Situation of Fire Services in Our Country (1962)
- 4) Illustration of Ambulance and Rescue Services