Outline of Measures for Fire Prevention and Safety under the Laws and Regulations of Fire Fighting
## Fire in Japan

<table>
<thead>
<tr>
<th>Total number of buildings for business purposes and apartment houses:</th>
<th>about 4 million</th>
</tr>
</thead>
<tbody>
<tr>
<td>Of these, buildings that are required to install a sprinkler system:</td>
<td>about 67,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Annual number of fires:</th>
<th>about 48,000 cases</th>
<th>1,625 fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Of these, building fires:</td>
<td>about 25,000 cases</td>
<td>1,254 fatalities</td>
</tr>
<tr>
<td>Of these, residential fires:</td>
<td>about 14,000 cases</td>
<td>1,100 fatalities</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Leading cause of death from building fires</th>
</tr>
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<tbody>
<tr>
<td>(1) CO poisoning/suffocation (38.2%)</td>
</tr>
<tr>
<td>(2) Burns (37.6%)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Leading causes for building fires</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Cooking utensils (14.6%)</td>
</tr>
<tr>
<td>(2) Cigarettes (10.0%)</td>
</tr>
<tr>
<td>(3) Arson (9.0%)</td>
</tr>
<tr>
<td>(4) Heating devices (5.7%)</td>
</tr>
<tr>
<td>(5) Suspicion of arson (5.3%)</td>
</tr>
</tbody>
</table>
Trend in the Number of Fires and Fatalities

![Graph showing the trend in the number of fires and fatalities from 2003 to 2013. The number of fires decreases overall, with a significant drop in 2009 and a slight increase in 2013. The number of deaths shows a more consistent decrease.](image-url)
Number of Building Fires by Purpose of the Building Where the Fire Originated

Year 2013

Number of building fires 25,053 cases

- Conventional homes: 8,892 cases (35.5%)
- Residences: 13,621 cases (54.4%)
- Apartment houses: 4,103 cases (16.4%)
- Multipurpose buildings: 3,058 cases (12.2%)
- Dwelling houses combined with other uses: 626 cases (2.5%)
- Warehouses: 558 cases (2.2%)
- Restaurants: 588 cases (2.3%)
- Business offices: 814 cases (3.2%)
- Factories and workshops: 1,750 cases (7.0%)
- Shops for the sale of goods: 374 cases (1.5%)
- Others: 4,290 cases (17.1%)

Total cases: 25,053
Division of National Government Roles regarding Measures for Fire Prevention and Building Safety

Building structure
(Fire prevention section, making interior decoration non-combustible, stairs, and others)

Fire fighting equipment (including fire hydrants and sprinklers)
Fire control (including fire management, maintenance of equipment, and training)

Ministry of Land, Infrastructure, Transport and Tourism
(Building Standards Act)

Fire and Disaster Management Agency of the Ministry of Internal Affairs and Communications
(Fire Services Act)
Measures for Fire Prevention and Safety under the Laws and Regulations of Fire Fighting (Overview)

Prevention of fires

- Appointment of a fire prevention management chief
- Implementation of fire fighting and evacuation drills
- Fire management

Sensing/detecting/notifying

- Automatic fire detection system
  (Automatically notify the outbreak of a fire to inside the building)
- Fire alarms for a short circuit
  (Notify a short circuit via alarms)

Fire fighting in the initial stage

- Fire extinguisher
- Indoor fire hydrants
- Sprinkler system
- Other automatic fire fighting equipment

Fire brigade operations

- Water for fire prevention
- Emergency outlet equipment
- Wireless communication auxiliary devices

Evacuation guidance

- Evacuation tools
- Exit route lighting /evacuation signage

⇒ Technology criteria and procedures are established by government ordinances and municipal ordinances based on the Fire Services Act. Also, necessary measures for fire prevention and safety are required in accordance with the purpose of the building, scale, and number of people. In addition, the fire fighting laws and regulations are applied to existing buildings as well (excluding some fire fighting equipment).
Examples of Fire Fighting Equipment

- Automatic fire detection system
- Exit route light
- Fire alarms for a short circuit
- Fire extinguisher
- Escape ladder
- Indoor fire hydrants
- Sprinkler heads
Facilities to be protected from fire: schools, hospitals, factories, department stores, office buildings, and condominiums.

Reference

Confirmation System before Starting to Use Facilities to Be Protected from Fire

- Clients or their agents/people who are involved with the facilities to be protected from fire or management officials
- Building officer or designated confirmation and inspection body
- Confirmation
- Commencement of construction works
- Interim inspection
- Inspection on completion
- Issuance of certificate of inspection
- Agreement
- Fire prevention management chief
- Fire protection equipment engineers
- Notification of commencement of construction works
- Notification of installation of fire fighting equipment or others
- Notification of starting to use facilities to be protected from fire
- Notification of the appointed fire prevention management chief
- Submission of fire prevention plans
- Fire chief or fire station chief
- Inspection
- Issuance of certificate of inspection
Facilities to be protected from fire include schools, hospitals, factories, department stores, office buildings, and condominiums.

- People who are involved in facilities to be protected from fire:
  - Fire chief or fire station chief
  - Registered architect
  - Building officer or designated confirmation and inspection body
  - Fire protection equipment engineers
  - Fire prevention management chiefs

- Steps:
  1. Commission of design
  2. Application for confirmation
  3. Certificate of confirmation
  4. Commission of construction works
  5. (Commission of interim inspection)
  6. Report of examination results
  7. Notification of installation of fire fighting equipment or others
  8. Commission of inspection on completion
  9. Issuance of certificate of inspection
  10. Notification of starting to use facilities to be protected from fire
  11. Submission of fire prevention plans

* Facilities to be protected from fire include schools, hospital, factories, department stores, office buildings, and condominiums.
People who are involved in facilities to be protected from fire or management officials

- Fire prevention management chiefs
  - Drawing up and revising fire prevention plans
  - Fire fighting and evacuation training
  - Inspection of fire fighting equipment
  - Supervision of fire use
  - Evacuation equipment management
  - Capacity control

- Fire protection equipment engineers

- Qualified inspector of fire protection equipment

- Qualified inspector of facilities to be protected from fire

Inspection rules / regulation for handling violations

- On-site inspection

- Regular inspections of facilities to be protected from fire

- Application for special cases

Application form for special cases is in the inspection results report of facilities to be protected from fire
Sprinkler system installation standards (extract)

- Sprinkler heads in a fireproof building must be installed within a horizontal distance of 2.3 m or less in each part of the ceiling
- Sprinkler systems must be capable of a water discharge pressure of 0.1 MPa or more, and a water discharge amount of 80 L or more at the top of each head when multiple heads operate simultaneously
- Other standards include installation height, emergency power sources, pumps, pipe laying, and water source standards

Certification of sprinkler heads

- Model standard conformance test
- Certified by the Minister
- Sampling test of individual products
- Applying a seal of approval to an accepted product
- Japan Fire Equipment Inspection Institute

Shipping

Obligation to use conforming products

- Preliminary examination by fire headquarters
- Execution of installation
- Inspection by fire headquarters after installation
- To inspect the sprinkler system every year for proper functionality, and to report the result of the inspection to fire headquarters
- To have an on-site inspection by fire headquarters and to receive instructions on any defects and correction orders

Planning and connection

<Examples of Fire Fighting Equipment Installation Standards (1)> Sprinkler System Installation Standards
Detector standards (extract)
• To send a signal within the necessary operation time when placed in a vertical air current at a speed of 1 m/s at 125% of nominal operating temperature (example of a fixed temperature detector)
• Not to operate at a temperature 10°C lower than the nominal operating temperature
• Other standards include strength, corrosion, oscillation, and heat-resistance

Automatic fire detection system installation standards (extract)
• To install a detector in each guarded area (every 500 m²)
• To install the detector at least 0.6 m from walls or crossbeams to prevent malfunction
• When sounding a limited alarm on the floor that a fire breaks out or on the floor above, to sound an alarm to the whole building if the fire signal does not stop after a certain period of time
• Other standards include installation height, emergency power sources, pumps, pipe laying, standard of water source

Certification (same as sprinkler heads)

Certification (same as sprinkler heads)

Standards of a receiver (abstract)
• To have functions that automatically display the cautionary zone of a fire and sounds an alarm when receiving a fire signal
• To display the cautionary zone within five seconds from starting receiving a fire signal
• Other standards include strength, corrosion, oscillation, and heat-resistance

Certification (same as sprinkler heads)

Preliminary examination by fire headquarters

Execution of installation

Inspection by fire headquarters after installation

To have an on-site inspection by fire headquarters and to receive instructions on any defects and correction orders
## Installation Rate of Sprinkler Systems and Automatic Fire Detection Systems

<table>
<thead>
<tr>
<th>Building</th>
<th>Sprinkler system</th>
<th>Automatic fire detection system</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Standard (Note 1)</td>
<td>Required number</td>
<td>Installed number</td>
</tr>
<tr>
<td>Intensive care home for the elderly, and others</td>
<td>In principle, all</td>
<td>31,534</td>
<td>31,415</td>
</tr>
<tr>
<td>Retailer</td>
<td>3,000 m² or above</td>
<td>7,317</td>
<td>7,265</td>
</tr>
<tr>
<td>Hotel</td>
<td>6,000 m² or above</td>
<td>1,989</td>
<td>1,980</td>
</tr>
<tr>
<td>Underground shopping mall</td>
<td>1,000 m² or above</td>
<td>58</td>
<td>58</td>
</tr>
<tr>
<td>Total of all facilities</td>
<td></td>
<td>67,085</td>
<td>66,792</td>
</tr>
</tbody>
</table>
On-site Inspections, Handling Violations

• Number of facilities to be protected from fire: about 4 million (as of March 31st, 2014)

• Number of on-site inspections by fire-fighting personnel: 890,000 cases per year (FY2014)

• Number of correction orders: 117 cases per year (FY2014)
Revision of the Fire Services Act in 2004 required the installation of residential fire alarms in bedrooms and other areas of all houses.  

<table>
<thead>
<tr>
<th>Locations to be installed</th>
<th>Installation rate: Approximately 80% (As of June, 2014)</th>
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<tbody>
<tr>
<td>Bedroom</td>
<td>Residential fire alarms</td>
</tr>
<tr>
<td>Corridor</td>
<td>Residential fire alarms</td>
</tr>
<tr>
<td>Living room</td>
<td>Residential fire alarms</td>
</tr>
<tr>
<td>Stairs</td>
<td>Residential fire alarms</td>
</tr>
</tbody>
</table>

The number of fatalities due to residential fires (excluding suicides) exceeded 1,000 in 2003, and reached 1,220 in 2005.  
Approximately 60% of those fatalities involved elderly persons aged 65 years or older, which will tend to increase reflecting the shift to an aging society. (Approximately 60% of fatalities were due to people who failed to escape from a fire.)

With the spread of residential fire alarms, the number of fatalities due to residential fires has been decreasing. Homes with residential fire alarms also received added benefits in terms of a decrease in fatalities, fire-damaged area, and amount of damage, compared with those without a fire alarm.

There are concerns over further increases with the shift to an aging society.

* Non residential buildings were already required to install fire alarms, but detached houses were not yet required to do so.