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Outline of the Current System of Rescue Services

Part 1 Rescue Services in Japan

1. The Rescue System

(1) Legal Basis

Human lifesaving activities performed by fire-fighting agencies are defined as the utilization of human and mechanical resources for eliminating danger and evacuating people to safe locations in cases of fire, traffic accidents, marine accidents, natural disasters, and machinery accidents.

The legal bases are the Fire Service Law, and the Ministerial Order Prescribing Standards for the Organization, Outfitting and Stationing of Rescue Squads (Ministry of Home Affairs). These provide that each city, town and village with a standing fire department must maintain rescue squads, in principle equal in number to the fire stations, and that a certain number of such squads must be composed of personnel who possess specialized knowledge and skills, special resources and equipment (see Tables 1 and 2), and special rescue vehicles.

(2) Fire Departments and Localities with Rescue Squads

As of April 1, 2004, there are 851 fire departments with established rescue squads, constituted by 2,942 cities, towns and villages.

(3) Number of Rescue Squads and Rescue Personnel

There are 1,494 rescue squads within the 851 fire departments, comprising 24,262 rescue squad members. On the average, one squad (functioning in principle as five passengers in one vehicle) has 16.2 members.

(4) Education and Training

A rescue squad undergoes a minimum of 146 hours of specialized training in rescue science at the prefectural fire defense school.

2. Performance of Rescue Activities

(1) Number of Rescue Operations and Rescued Person

Throughout Japan during 2003 a total of 51,810 rescue operations were performed, and 52,301 persons were rescued.

(2) Breakdown of Rescue Activities

Broken down by types of incidents, the above total included 20,414 rescues from traffic accidents (39.4%), 6,418 rescues from fires (12.4%), and 13,432 rescues from accidents caused by a collapsed structure (25.9%). (See Table 3)

3. Emergency Firemen's Assistance Squads

Drawing lessons from the Great Hanshin Earthquake of January 1995, emergency firemen's assistance squads have been created for the purpose of ensuring that the nations fire-fighting agencies are capable of the rapid rescue activities required for efficient performance of lifesaving operations in the event of an earthquake or other large-scale disaster in Japan. They are organized in June 1995. As of April, 2005, there are 2,963 squads and the details are as follows:

- Mobile Support Division – 28 squads (for information gathering with helicopters)
- Local Superviser Division – 107 squads
- Rescue Division – 280 squads
- Ambulance Division – 600 squads
- Support Division – 250 squads (for resupply activities)
- Fire-Fighting Division – 1148 squads
- Special Division – 541 squads
- Aviation Division – 67 squads
- Marine division – 19 squads

Part 2 Rescue Services in the City of Osaka

1. The Rescue System

(1) Rescue Squads **Total: 28 squads**

Based at fire stations 25 squads
Based elsewhere (underground shopping center, high-rise buildings, seacoast): 3 squads
* The total includes 13 special rescue squads.
* Water rescue squads are attached to marine fire stations.

(2) Number of Rescue Squad Members

There are 352 full-time rescue squad members

(3) Vehicles

Ordinary Vehicles for Rescue Services: 28
Special Rescue Vehicles: 12

2. Performance of Rescue Activities

(1) Number of Rescue Operations and Rescued Persons

In the City of Osaka during 2004 a total of 999 rescue operations were performed, and 792 persons were rescued.

(2) Breakdown of Rescue Activities

Broken down by types of incidents, the above total included 317 rescues from fires (31.7%), 144 rescues from traffic accidents (14.4%), and 392 rescues from accidents caused by a collapsed structure (39.2%). (See Table 4)

3. Super Rescue Squads

Preparations for the establishment of super rescue squads began in 1996, in the wake of the Great Hanshin Earthquake and the Tokyo subway gas poisoning incident, and in order to respond to the increase of potential fire hazards accompanying the proliferation of multistory, underground and very large urban facilities. The overall plan involves the reorganization of the 28 existing rescue squads and the conversion of 12 of them to super rescue squads for special types and modes of operation, which will be made up of personnel possessing special knowledge and skills, supplied with advanced resources and equipment, and stationed at various locations around the city.

- Big Urban Rescue Squads
  Organized to fight fires occurring in underground shopping centers or other underground facilities, high-voltage electrical transmission or transformer facilities, and facilities where radioactive materials are handles. (Inaugurated in October 1996)

- Chemical-Related Rescue Squads
  Organized to fight fires involving dangerous materials, poisons, or high-pressure gas
  (Inaugurated in October 1997)

- Air Rescue and Ambulance Squads
  Work with helicopters to fight fires in multistory buildings, and perform rescues and evacuations during long-term operations following machinery accidents.
  (Inaugurated in April 1998)

- Water Rescue Squads
  (Inaugurated in April 2005)

(1) Big Urban Rescue Squad

a. Special Rescue Vehicles

Type III Rescue Vehicle:	Crane (3 t), winches (front and rear, 5 t), lights (500W x 4), generator (100V, 10kVA), 4-wheel drive
Type IV Rescue Vehicle:	Winch (front, 3 t), light (150W x 2), generator (100V, 900VA), 4-wheel drive
	The two vehicles can be loaded on a vehicle transport plane and delivered over long distances.

b. Advanced Rescue Equipment

① Type I Visual Search Device
A miniature camera (6mm radius), mounted at the end of an 11-meter strand of optical fiber enclosed in a flexible hose, transmits images for use in searching The device is also fitted with a microphone, light, temperature sensor, gas detector, and fresh air delivery mechanism

② Type II Visual Search Device
A miniature camera (6mm radius) mounted at the end of a telescoping rod (1 to 3 meters) transmits images for use in searching. Requires a larger opening for insertion than the type I device, but provides the advantage of one-person operation. Also fitted with a microphone and light.

③ Underground Sound Detector
Senses and amplifies calls, moans, tapping, vibration or other sounds in order to locate victims trapped in rubble from an earthquake, collapsed building, or landslide.

④ Heat Imaging Device
Employs infrared sensing to provide precise images in darkness or smoke where visible light cannot be transmitted

⑤ Night Vision Device
Makes the viewers vicinity visible by amplifying weak illumination such as moonlight.

⑥ Electromagnetic Wave Detector
Detects the location of victims trapped in rubble from an earthquake, explosion, etc. by emitting radio waves and analyzing their reflections with a microcomputer to detect and identify modulations caused by heartbeats or breathing. Capable of searching rubble to a depth of 90 meters when there is no radio wave interference form metal plates or the like.

⑦ Underwater Probe

(2) Chemical-Related Rescue Squads

a. Special Rescue Vehicle
Type II Rescue Vehicle: Winch (front, 5 t), trailer (carrying gas analysis equipment), lights (70W x 3), generator (100V, 2.3kVA), transportable pump

b. Main Special Equipment

Equipment	Description
① Gas Chromatography Measuring System	When hazardous material, poison, etc. leak or occur, the portable type GC/MSI identifies chemical properties, measures density and checks danger levels. Capable of measuring about 80,000 different gases. In addition, treatment methods are checked according to the hazardous material search database.
② Non-contact Thermometer	Device for measuring the temperature of an inaccessible point such as the inside of a tank. When a fire breaks out in a dangerous facility, this thermometer measures an explosion induced by radiant heat and its reaction danger level Range from –10 to 950°C.
③ Poisonous Gas Detector	Measures danger levels such as flammable gases or irrespirable atmosphere. Capable of measuring flammable gases (methane calibration), oxygen concentration, carbon monoxide, hydrogen sulfide simultaneously.
④ Portable Gas Alarm	Sounds an alarm when an explosion hazard or oxygen lack hazard occurs to notify rescue team members and to secure safety.

⑤ Hydrogen Ion Densitometer	Measures the pH of leaking hazardous materials, poisons and cleaning water from a decontamination shower and checks their danger levels. Measuring range from pH2 to 12.
⑥ Leak Prevention Mat	Air-inflated mat blocks cracks in tanks, piping, etc. to prevent leakage of dangerous substances.
⑦ Poisonous Gas Meter	Measures the density of specified gases with a detection tube (24 types)
⑧ Chemical Protective Clothing	Airtight one-piece uniform for complete blockage of outdoor air. It protects a rescue team member by preventing not only liquid poison but also gaseous poison or hazardous material from entering.
⑨ Repairing Kit for Hazardous Material Leakage	Tools for temporarily repairing leakage parts on the tubing. The kit contains wooden dowels, rubber spherical pegs.
⑩ Portable Biological Agent Detecting System	This potable simplified biological agent detecting kit can detect and identify the 7 bacterial pathogens such as Bacillus anthracis only for about 20 minutes
⑪ Portable Biological Agent Collector	This portable biological agent collector captures 0.5μ or larger pathogens and spores which float in the air, in a small amount of liquid.
⑫ Simplified Biological Agent Detector Paper	This detector paper easily detects biological agent It can detect 5 bacterial agents and the like such as Bacillus anthracis for only 20 minutes
⑬ Portable Chemical Agent Detector	Can detect 10 chemical agents such as nerve gas and 100 or more toxic chemical substances which are in air, on roads or attached to the equipment.
⑭ Chemical Agent Detector Paper	Can detect toxic chemical agents such as liquid sarin in a moment
⑮ Positive Pressure Type Chemical Protective Clothing	This chemical protective clothing having compressed air open-circuit always has positive pressure (higher than the outdoor pressure) so that no outer contaminated air enters clothing inside even if toxic chemical agents are around
⑯ Decontamination Shower System	The shower room can be set up only for 1 minute by using an air cylinder or air blower. In this system, not only hot air can be supplied through the included hot-water supplier, but also waste water in the shower room can be collected in the 2.5 ton cesspool with a drainage pump
⑰ Neutralization Duster	
⑱ Protective Helmet	

(3) Air Rescue and Ambulance Squads

a Special Rescue Vehicle
Type II rescue Vehicle Winch (front, 5 t), light (70W x 3), generator (100V, 2.3kVA), transportable pump

b. Main Special Equipment
Utilizes items (1) through (5) from the list of Big Urban Rescue Squad equipment in section 2.3.1 above

(4) Water Rescue Squads

Water rescue teams based at marine fire stations are equipped to rescue persons trapped in the water or inside sunken vehicles or ships following marine accidents.

Part 3 International Disaster Relief Teams

1. Purpose

These teams are mobilized pursuant to the International Emergency Relief Personnel Dispatch Law of 1987, to provide rapid response when Japan is requested by a government or other coordinating agency to assist in relief efforts following a major disaster in another country

2. Composition

The Japan Disaster Relief Team consists of three international rescue teams, as follows:

- International Rescue Team (IRT)
- International Medical Team
- International Specialists Team

The international disaster relief teams are maintained by the Fire Defense, National Police, and Maritime Safety Agencies of the government of Japan.

3. Service Record

① August 22, 1996: One fire inspector sent to Cameroon following poison gas discharge and fires around Lake Nyos.

② October 11, 1996: 8 rescue squad members sent to El Salvador following an earthquake.

③ June 21, 1990·	6 rescue squad members sent to Iran following an earthquake.
④ July 16, 1990	11 rescue squad members sent to the Philippines following an earthquake.
⑤ May 15, 1991·	38 rescue squad members (including 11 members of the Osaka Municipal Fire Department) sent to Bangladesh following cyclones, along with two helicopters (one each from the Osaka Municipal Fire Department and the Tokyo Metropolitan Fire Defense Agency).
⑥ November 13, 1993:	11 rescue squad members sent to Malaysia following the collapse of an apartment building in Kuala Lumpur
⑦ October 29, 1996:	9 rescue squad members (including two members of the Osaka Municipal Fire Department) sent to Egypt following a building collapse
⑧ October 22, 1997:	30 rescue squad members sent to Indonesia to assist in monitoring forest fires from helicopters and advise on firefighting.
⑨ January 26, 1999·	15 rescue squad members (including two members of the Osaka Municipal Fire Department) sent to Colombia following an earthquake.
⑩ August 17, 1999	25 rescue squad members sent to Turkey following an earthquake
⑪ September 21, 1999	46 rescue squad members sent to the central district of Taiwan following an earthquake
⑫ May 22, 2003	17 rescue squad members sent to the People's Democratic Republic of Algeria following an earthquake.

⑬ February 25, 2004	7 rescue squad members sent to Morocco following an earthquake.
⑭ December 29, 2005	46 rescue squad members, (including 15 members of the Osaka Municipal Fire Department) sent to the Kingdom of Thailand following tsunami, along with two helicopters (one each from the Osaka Municipal Fire Department and the Tokyo Metropolitan Fire Defense Agency).

Table 1 Basic Rescue Equipment

Type	Device
General Rescue Equipment	Hook and ladder 3-stage ladder Metal folding ladder or wire ladder Inflatable rescue mats Survivor slings or rescue belts Flat stretchers Ropes Carabiners Pulleys
Tools for Removing Heavy Objects	Oil hydraulic jack Oil hydraulic spreader Mobile winch Wire rope Manhole rescue equipment Rescue crane*
Cutting Tools	Oil hydraulic cutter Engine cutter Cutting torch Chain saw Iron wire cutter
Wrecking Tools	General-purpose hatchet Hammer Portable pneumatic drill
Measuring Devices	Flammable Gas Meter
Breathing Equipment	Air respirator (with spare cylinder) Air supplementing cylinder*
Protective Gear for Rescue Personnel	Leather gloves Electricity-resistant gloves Safety belts Dustproof goggles Portable alarms Gas masks Heat-resistant clothing* Anti-radiation suits (with individual dosimeters)*
Marine Rescue Equipment*	Sets of diving gear Lifesaving vests Underwater floodlights Lifesaving rings Buoys Lifesaving boats Outboard motor Underwater scooter
Underwater radios	Underwater watches Underwater television cameras
Mountain Rescue Equipment*	Sets of climbing gear Basket stretchers

Type	Device
Miscellaneous Rescue Equipment	Set of floodlight Portable floodlights Portable loudspeakers Portable radios Emergency medical treatment kits Equipment for moving vehicles** Other portable devices

Note:
1. *Furnished when appropriate for local conditions.
2. Equipment listed in this table may be replaced with general-purpose equipment or with other equipment which provides similar performance.

Table 2 Additional Rescue Equipment

Type	Device
Tools for Removing Heavy Objects	Mat-type air jack Large oil-hydraulic spreader Props Chain block*
Cutting Tools	Air saw Large oil-hydraulic cutter Air cutter Concrete/rebar chainsaw:
Wrecking Tools	Jackhammer Hammer drill
Measuring Devices	Poisonous gas meter Oxygen densitometer Dosimeter
Breathing Equipment	Oxygen respiratory apparatus (with spare cylinder) Simple respiratory apparatus Dust masks Ventilators Airline masks*
Protective Gear for Rescue Personnel	Electricity-resistant suits Electricity-resistant trousers Electricity-resistant boots Poison-protective clothing Special helmets*
Search Equipment	Simple Imaging Search Device
Miscellaneous Rescue Equipment	Pulley chairs Rope elevator Lowering device** Generator

Note:
1 *Furnished when appropriate for local conditions.
2. Equipment listed in this table may be replaced with general-purpose equipment or with other equipment which provides similar performance

Table 3 Rescue Operations in Japan in 2003

Operation / Incident	Fire	Traffic Accident	Marine Accident	Natural Disaster	Machi-nery	Collapsed Structure	Gas Leak or Suffo-cation	Explosion	Other	Total
Rescue Operations	6,418 (12.4)	20,414 (39.4)	2,143 (4.1)	118 (0.2)	1,066 (2.1)	13,432 (25.9)	125 (0.2)	3 (0.0)	8,091 (15.6)	51,810 (100.0)
Persons Rescued	1,491 (2.9)	26,646 (50.9)	1,891 (3.6)	243 (0.5)	1,313 (2.5)	13,142 (25.1)	103 (0.2)	1 (0.0)	7,471 (14.3)	52,301 (100.0)

Note: Numbers in brackets are percentages (%)

Table 4 Rescue Operations in the City of Osaka during 2003

Operation / Incident		Fire	Incidents other than Fires									Total
			Traffic Accident	Marine Accident	Natural Disaster	Machi-nery	Collapsed Structure	Gas Leak or Suffo-cation	Explosion	Other	Subtotal	
Rescue squad Mobilizations		1,442	297	78	0	72	674	5	0	238	1,364	2,806
Rescue operations		412	147	44	0	34	326	5	0	54	610	1,022
Persons rescued	Evacu-ated	52	159	49	0	55	339	5	0	55	662	714
	Guided	31	0	0	0	0	1	0	0	0	1	32
	Total	83	159	49	0	55	340	5	0	55	663	746

As of April 1, 2004

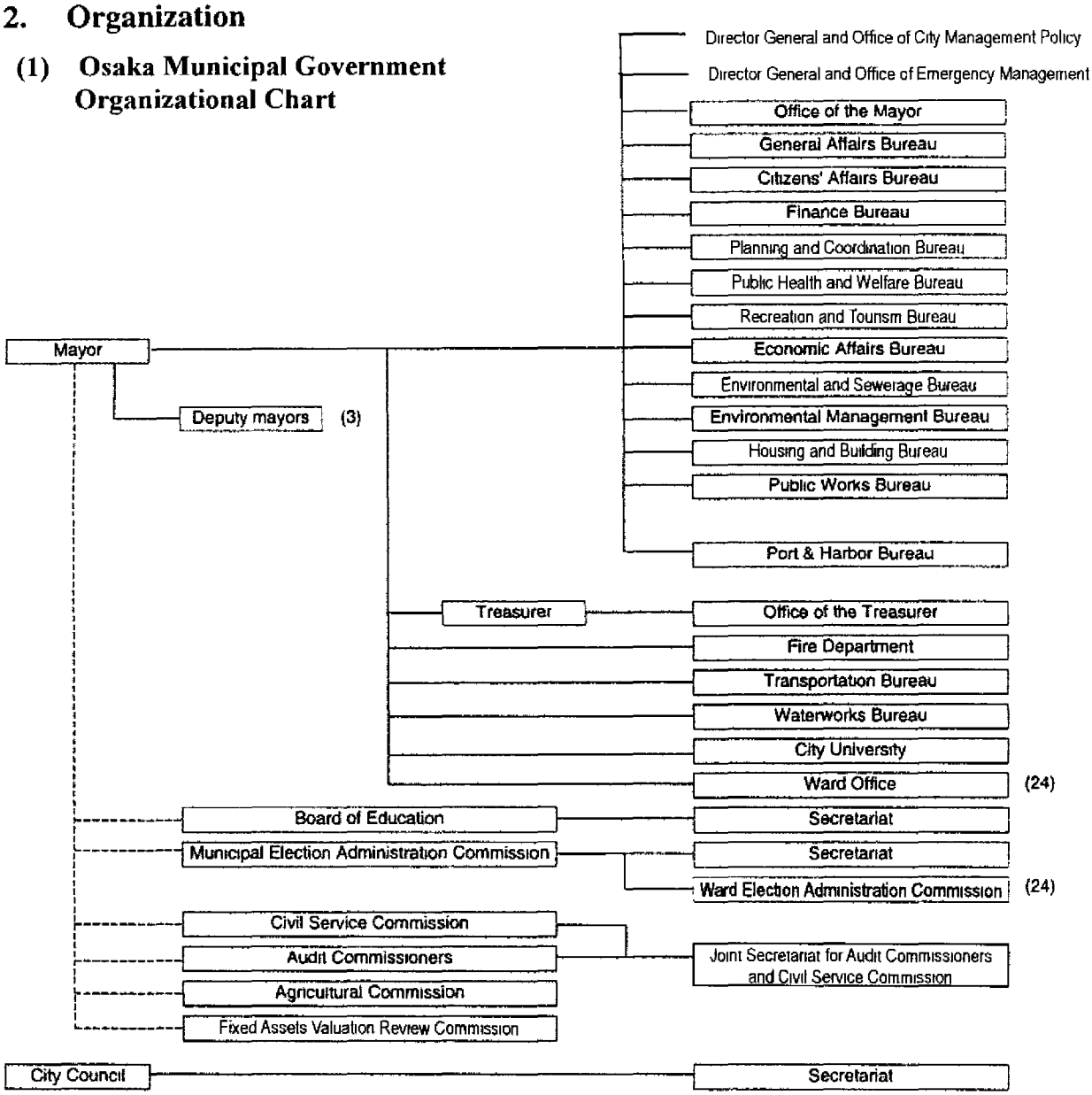
Rescue Systems in the City of Osaka

1. Demographics

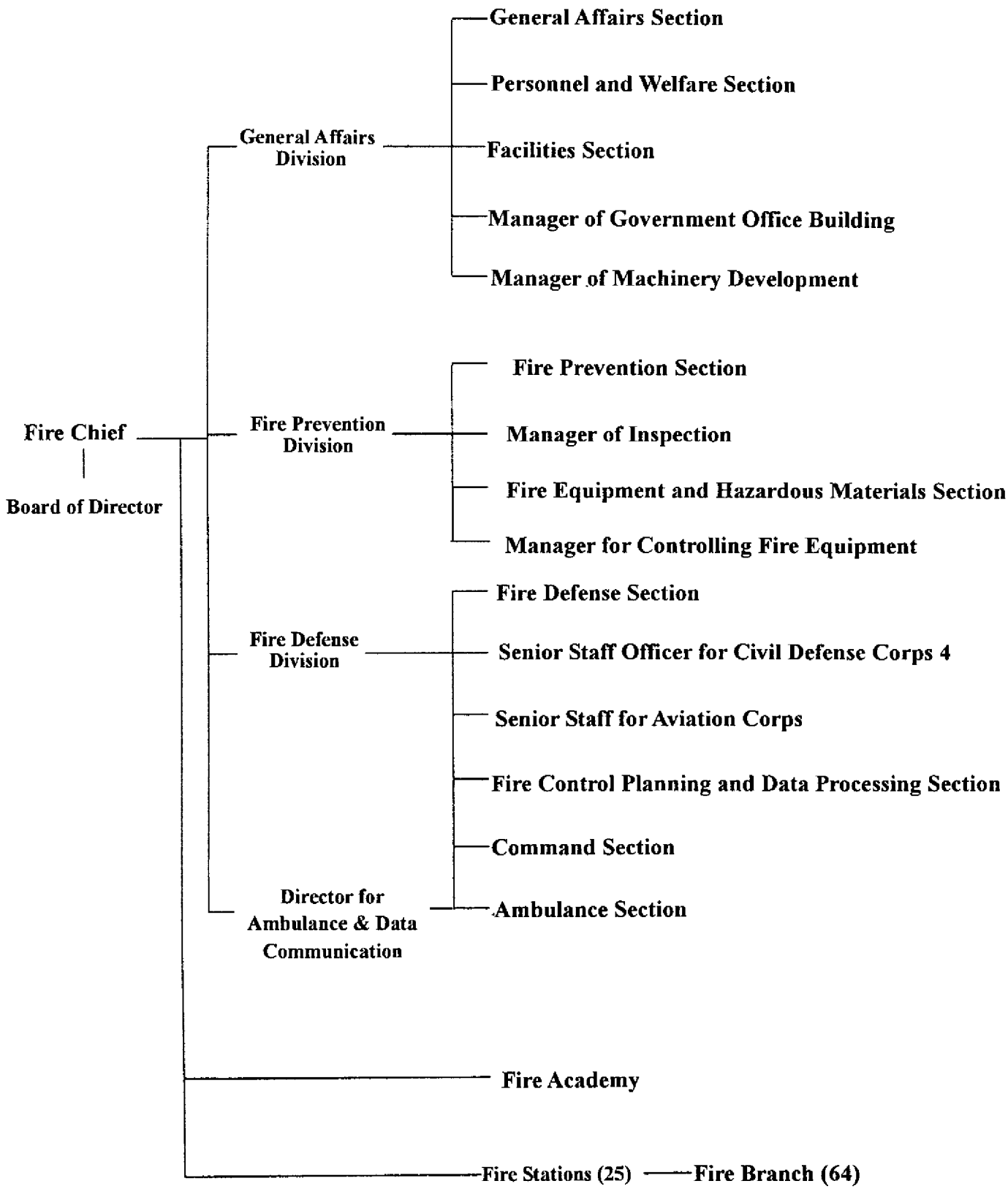
Population:	2,627,421
Males:	1,283,136
Females:	1,344,285
Area:	221 96 km^2
Population Density:	11,837 per km^2
Number of Households:	1,220,862

2. Organization

(1) Osaka Municipal Government Organizational Chart



(2) Fire Department Organizational Chart



3. Number of Professional Fire Fighters

Total number of professional fire fighters	Number of officers	Other staff
3,501	3,413	88

○ Officer ranking system

Chief Fire Superintendent	1
Senior Fire Superintendents	17
Fire Superintendents	33
Fire Colonels	101
Fire Captains	429
Fire Lieutenants	1,170
Fire Sergeants	1,220
Assistant Fire Sergeants	11
Firemen	430
Total	3,412

4. Fire Defense Buildings

Fire defense headquarters	Fire fighter's academy	Aviation corps	Fire stations	Fire branch stations
1	1	1	25	64

5. Fire engines and other vehicles

Pumpers and related vehicles		**168**
	Pumpers	66
	Tank trucks	32
	Small tank trucks	70
Rescue and related vehicles		**28**
	Rescue vehicles	16
	Special rescue vehicles	12
Aerial vehicles		**30**
	Ladder trucks	27
	Aerial water sprayers	2
	Water tower	1
Chemical fire trucks and related vehicles		**11**
	Chemical fire trucks	7
	Stock solution carriers	4

Rescue support and related vehicles		**15**
	Rescue support vehicles	4
	Smoke-inhalation rescue vehicle	1
	Rescue equipment trucks	9
	Special quake-proof vehicle	1
Special vehicles		**7**
	Lighting vehicles	5
	Supply vehicles	2
Ambulances		**59**
Other fire fighting vehicles		**66**
	Command vehicle	3
	Theater-of-action command vehicles	9
	Command & survey vehicles, Public relation vehicles	50
	Conveyance vehicle for long-distance large-volume water supply systems	4
Fireboats		**3**
Helicopters		**2**

6. Disaster Statistics (for 2004)

(1) Fire Statistics

Number of fires (incidences)	1,458
Area of fire damage (m^2)	12,828
Damage (a thousand yen)	1,138,181
Deaths	43
Casualties	226

(2) Rescue statistics

Number of rescues (incidences)	194,684
People removed from danger	170,427

(3) Human lives saved

Number of rescues	999
Individuals rescued	792

7. Fire hydrants and water reservoirs

Fire hydrants			Water reservoirs		
Total	Public	Designated	Total	Public	Designated
31,922	31,696	226	1,611	710	901

8. Disaster Response System

Fire squads are managed by the City of Osaka Fire Department, which has 25 fire stations and 64 branch stations. The fire-fighting personnel, fire engines and related equipment and materials are rapidly deployed for efficient fire fighting activities

(1) Fire Defense Information System (ANSIN)

A fire vehicle deployment control and information transmission system has been introduced to fire fighting command systems centering on the fire rescue command system. These systems were integrated into the fire defense information system, ANSIN, and prepared

This new system operates as follows. Mobility management optimizes the efficient formation of fire squads. Each squad receives fire defense support information by voice and computer images via onboard monitors, which helps the squads to be deployed more quickly and effectively. By these means the fire defense system of the City of Osaka can get its work done more systematically and efficiently than ever before

(2) Fire defense plan

Today, fire defense requires extremely complicated, highly technical decision making This is particularly true when it comes to high-rise buildings, subways, underground shopping malls, places where dangerous substances are handled, densely populated areas, and so on. To cope with these challenges, the Fire department has been preparing advance plans, by reviewing and evaluating each fire squad's formation, and skills and techniques.

(3) Permanently stationed fire defense squads

A fire defense squad, including a command/support team and a survey team, is permanently stationed in each of the northern, southern, eastern, and western quadrants of the City of Osaka Theater-of-operation squads streamline the initial on-site fire defense activities and organize the chain of command, information transmittal, etc. These squads also investigate, analyze and identify the cause of the fire.

(4) Handling fire extinguishing chemicals

Fire extinguishing chemicals are permanently stored in 4 depots within the city. Special vehicles are stationed at these bases, which can carry large quantities of chemicals rapidly to the site, in the event of dangerous-substance fires.

(5) Fire defense training

Fire control training facilities and equipment are utilized to train the staff, so they will be able to respond to the complicated, diversified urban fires that befall modern cities. The personnel learn many fire defense techniques, improve their skills, and get accustomed to using various types of fire fighting materials and equipment.

(6) Mutual support agreements

To strengthen our ability to deal with problems arising from across-city-border disasters and large-scale fires, the City of Osaka has concluded mutual support agreements with 32 cities and 5 towns in Osaka Prefecture, and with 2 local fire defense organizations in neighboring cities. The Fire Department has also signed aircraft-related rescue support agreements to cover Osaka International Airport, Kansai International Airport, and their surroundings, as well as an operations agreement with the Osaka Maritime Safety Department

9. Fire Prevention

The City of Osaka holds many events around the year, to promote awareness of the importance of fire prevention and help create disaster-proof townships. These include the Fire Prevention Drive in the spring and fall; resident-focused fire prevention campaigns, fire prevention posters, mottoes, drawings and paintings, and essays; Fire Prevention Week, centered around the Respect-for-our-Elders holiday, to help protect senior citizens against fires (including lectures and visits to senior citizens' homes) under the slogan "Protect Our Elders from Fire".

These events and campaigns are publicized in the press and other information media to make the public aware of them.

Public relations staff members give demonstrations and instruction to junior high school students about how to use mobile pumps, and they distribute fire prevention picture books to preschool children and social studies fire prevention pamphlets to fourth graders.

Theaters, department stores and other buildings that accommodate more than 30 people, as well as other designated places with a capacity of more than 50 people, are expected to have a fire marshal. People are sent to a class where they can receive a fire marshal's certificate. In 1994, courses were begun to qualify people as disaster prevention center staff members, to be stationed in very large buildings.

In some designated places, on-the-spot inspection is efficiently conducted using a support information collection system (preventive information system) for the fire defense information system "ANSIN". Instruction is given to sharpen the skills of the fire prevention administrators, on the installation and maintenance of fire-fighting equipment, and to reinforce fire prevention measures. Inns, hotels, department stores, theaters, cinemas and many other places are checked periodically to see if they meet a specified set of fire prevention criteria. Certified buildings are given the fire prevention standard qualification symbol.

(1) On-the-spot inspections

Here are the data concerning on-the-spot inspections and the sites where they occur.

a. Regulated sites (year: 2003)

Number of sites	Total number of on-the-spot inspections	Total number of inspectors dispatched
96,854	64,106	73,861

Note: Fire-fighting equipment must be located at regulated sites in accordance with the Fire Service Law, and an independent or joint fire prevention administration is also required

b. Implementation of fire prevention activities for homes

(year: 2003)

Sites inspected	248,141
Total inspectors dispatched	249,162

(2) Approval of fire-safe construction

Certain types of buildings under construction must be reviewed and approved to make sure they incorporated fire-safe construction measures. The Fire Chief issues an approval of construction only after these check-ups and reviews are successfully completed Here are the number of reviews and the results

(year: 2003)

Number of reviews	Approvals	Conditional approvals	Plans notified	Reviews not possible	Rejections
9,914	7,771	1,942	201	0	0

(3) Controlling the use of dangerous materials

Because misuse of dangerous materials can be disastrous, special care is taken when issuing licenses to handle dangerous materials and to prevent disasters in petrochemical complexes and other designated areas. On-the-spot inspections and on-the-street controls are also intensified, in order to protect the people in and around these areas

Dangerous Materials Awareness Week helps factories and industrial plants boost their voluntary security systems The table below gives the number of sites that store or handle dangerous substances

(as of March 31, 2004)

Classification	Number of sites
Dangerous-materials manufacturing	186
Dangerous-materials storage	5,524
Dangerous-materials handling	1,858
Small-lot dangerous-materials storage/handling	9,134
Designated flammables storage/handling	1,696
Total	18,398