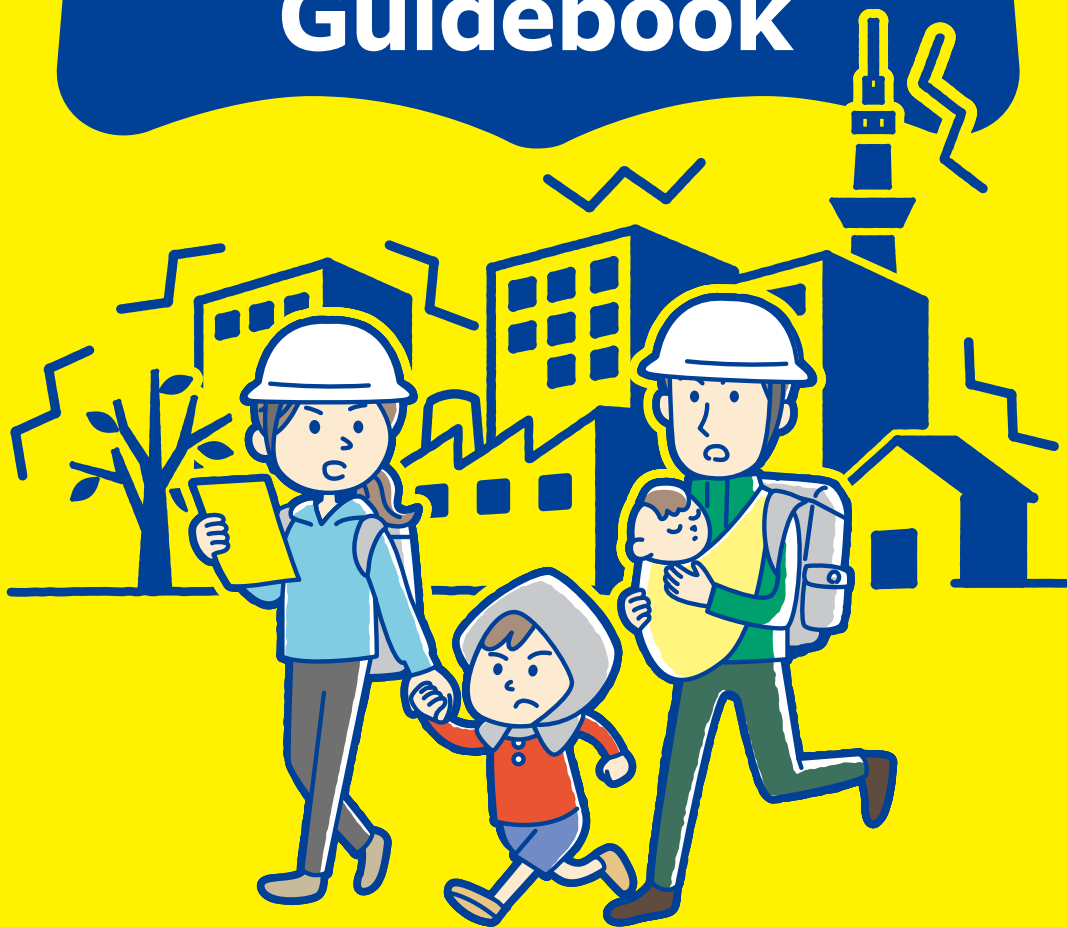


Sumida City Earthquake Preparedness Guidebook



がいくくごばん 外国語版について

がいくくじん かたほんくじしん し
外国人の方に本区の地震リスクを知ってもらうため、「墨田区地震ガイドブック（外国語版）」を作成しています。
がいくくごばん えいご ちゅうごくご かんこくご しゅるい
外国語版は英語・中国語・韓国語の3種類があり、区のホームページからダウンロードすることができます。

Sumida City created foreign-language versions of the Sumida City Earthquake Preparedness Guidebook to inform foreign residents about the risks of earthquakes affecting the city.

The guidebook is available in English, Chinese and Korean versions, which are downloadable from the city website.

为了让外国人了解本区的地震风险，区内制作了《墨田区地震指南》。
外语版包括英语、中文、韩语3种，可以从区主页上下载。

為了讓外國人了解本區的地震風險，製作了《墨田區地震指南（外語版）》。
外語版包括英文、中文、韓文3種語言，可從墨田區網站下載。

외국인 여러분에게 스미다구의 지진 위험을 알리기 위해 ‘스미다구 지진 가이드 북’을 제작했습니다.
외국어 버전은 영어·중국어·한국어의 3종류가 있으며, 스미다구 홈페이지에서 다운로드할 수 있습니다.

English
简体中文
繁體中文
한국어



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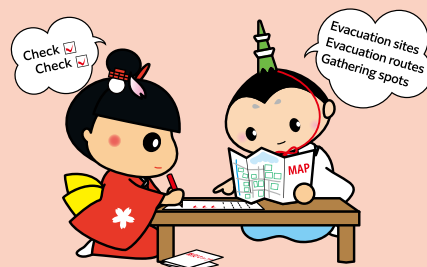
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1

Expand Your Earthquake Knowledge



1 Expand Your Earthquake Knowledge

Earthquake Trivia

1-1 The Mechanisms of Earthquakes

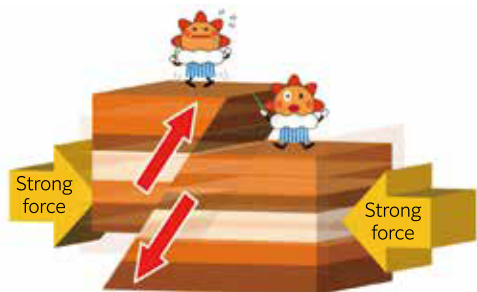
Check together!



2 Prepare for Earthquakes

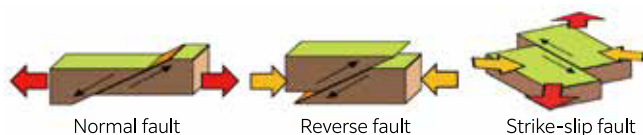
Why Do Earthquakes Occur?

The Earth's surface is made up of tectonic plates—composed of what is known as bedrock—which are pushed and pulled by strong forces from neighboring plates. This force can cause a plate to suddenly shift and move at any given moment, creating earthquakes.

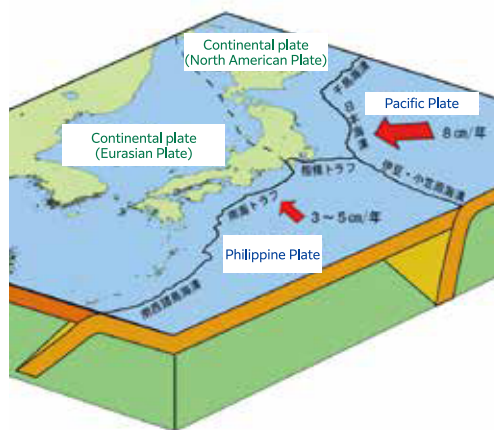


Depending on how the force is applied to tectonic plates, there are several ways they can shift.

The arrows in the figure below indicate the direction of the force on the plates.



Source: Japan Meteorological Agency



Schematic diagram of tectonic plates around Japan

Source: Japan Meteorological Agency

3 Learn about Community Measures

Magnitude and Seismic Intensity

◆ Magnitude

Magnitude is a measurement of the size (energy) of the earthquake. When the magnitude increases by 1, the energy of the earthquake is about 32 times greater; when it increases by 2, the energy is 1,000 times greater. This means that an earthquake with a magnitude of 8 has energy equivalent to 1,000 magnitude 6 earthquakes.

The energy an earthquake produces is significantly greater even if the difference in magnitude is only one.

◆ Seismic intensity (*shindo*)

This indicates the intensity of the tremors that earthquakes cause in different areas. Since the tremors vary greatly depending on soil condition and the like, there may be a disparity in intensity even in the same region.



4 If an Earthquake Strikes

5 Emergency Information

Intensity of Tremors

The Japan Meteorological Agency Seismic Intensity Scale (commonly known as the Shindo scale), measures the intensity of the tremors an earthquake produces in a range from 0 to 7. The table below shows the approximate damage and related effects that can occur in an area when a certain seismic intensity is reached.

Seismic intensity	Anticipated scenarios
Seismic intensity 0	People do not feel the tremors, but a seismograph records them.
Seismic intensity 1	Some people who are indoors in a quiet environment may feel the tremors slightly.
Seismic intensity 2	Most people who are indoors in a quiet environment will feel the tremors. People who are sleeping may wake up.
Seismic intensity 3	Most people who are indoors will feel the tremors. People who are walking may also feel the tremors. Most people who are sleeping will wake up.
Seismic intensity 4	Most people will be alarmed; if they are walking, they will feel the tremors. Almost everyone sleeping will wake up.
Seismic intensity 5-	Most people will feel fear and instinctively seek to hold on to something.
Seismic intensity 5+	The tremors will cause difficulties in performing normal activities for most people, such as walking without holding onto something.
Seismic intensity 6-	Standing upright will become difficult.
Seismic intensity 6+	People are unable to stand normally and cannot move unless they crawl.
Seismic intensity 7	People are unable to move and may be knocked around by the tremors.

Some earthquakes of seismic intensity 7 that have struck Japan

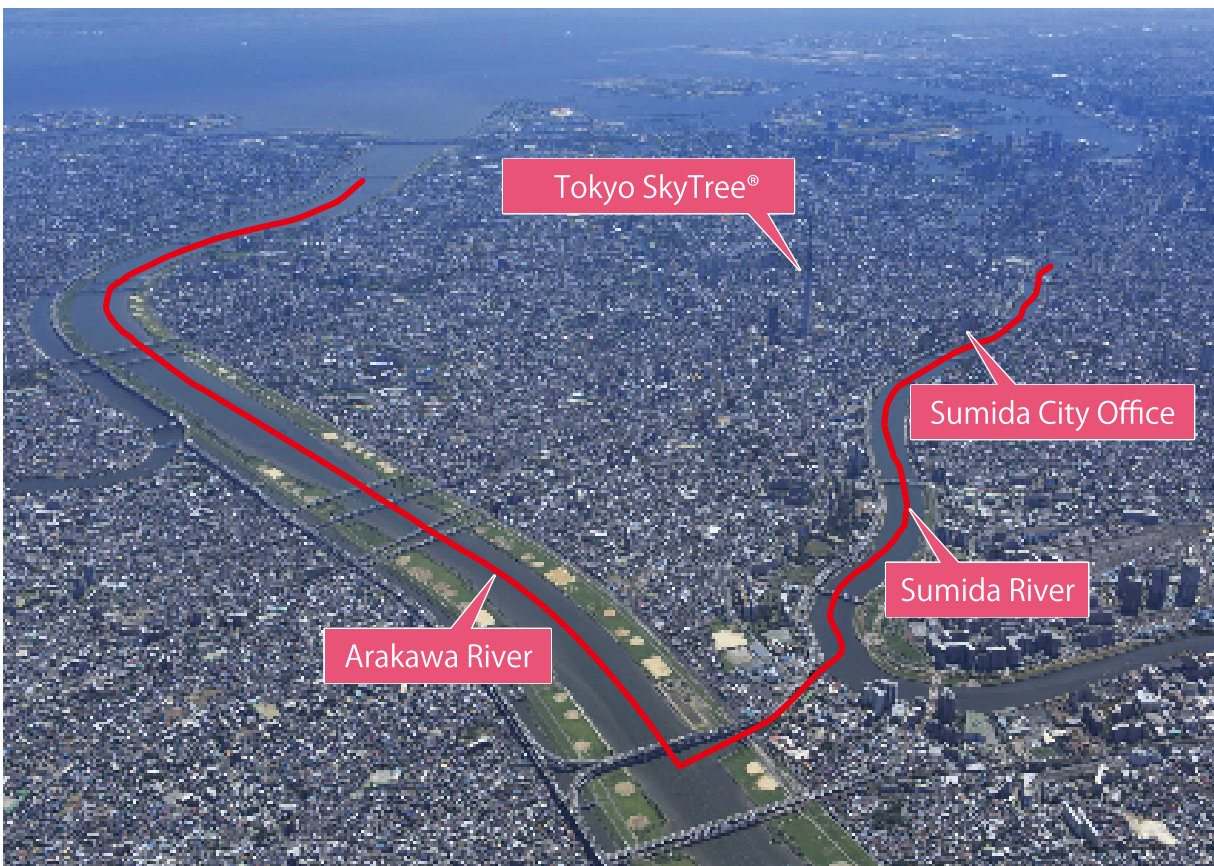
- 1995 Great Hanshin-Awaji Earthquake Disaster (Southern Hyogo Prefecture Earthquake)
- 2004 Niigata Prefecture Chuetsu Earthquake
- 2011 Great East Japan Earthquake Disaster (Tohoku Region Pacific Coast Earthquake)
- 2016 Kumamoto Earthquake
- 2018 Hokkaido Eastern Iburi Earthquake
- 2024 Noto Earthquake

1-2 Geological Characteristics of Sumida City

- Sumida City developed in the river delta area at the mouth of the former Tone River system and the Arakawa River system, and its terrain is mostly flat.
- It is a flat lowland with a maximum height of 4 meters above sea level and a minimum of 1.2 meters below sea level. It is an alluvial plain consisting of mostly sand and clay.
- The area has a mix of residential, commercial and industrial facilities. Although the number of fire-resistant buildings is increasing, the area still has a *shitamachi* (old town) atmosphere, with many narrow alleys and old wooden houses.



When an earthquake strikes, there is a risk of fires occurring in various locations at the same time.



Sumida Disaster Preparedness Column

Column 1

Sumida City Initiatives in Response to the Noto Earthquake

We received a request from Wajima City, Ishikawa Prefecture, for relief supplies following the Noto Earthquake that occurred on January 1, 2024. In response, we sent relief supplies to Wajima with the cooperation of the Sumida branch of the Tokyo Trucking Association.



1-3 Estimated Damage from an Earthquake Directly under the Tokyo Metropolitan Area

The table below shows the estimated damage for Sumida City as calculated by the Tokyo Metropolitan Government in May 2022.

Type of earthquake	Earthquake directly under the southern part of downtown Tokyo
Size of earthquake	Magnitude 7.3
Seismic intensity in Sumida	6+ (6- or 7 in some areas)
Situation	Winter, 6 p.m., wind velocity 8 mps
Deaths	321
Injured (serious injuries)	3,307 (578)
No. of totally destroyed buildings	5,398
No. of fires and buildings destroyed by fire	19 fires, 4,143 buildings

◆ Characteristics of damage in Sumida City

Fires, building collapses, liquefaction and other serious damage may occur.



Damage to residential houses and spread of fire (1995 Great Hanshin-Awaji Earthquake)








Damage to residential houses and spread of fire (1995 Great Hanshin-Awaji Earthquake)



Manhole that rose due to liquefaction (2011 Great East Japan Earthquake)

Source: Institute of Scientific Approaches for Fire & Disaster

◆ Damage to essential services and estimated restoration periods

	Damage rate (in Sumida)	Restoration periods (Tokyo)
Gas	 100%	About 6 weeks
Water	 53%	About 17 days
Electricity	 42%	About 4 days (excluding power outages due to spreading fires)
Communications	 10.4%	About 4 days
Sewerage	 6.7%	About 21 days



1-4 Regional Risk Level Measurement Survey for Earthquakes

What does “regional risk level” mean?

The regional risk level is the result of an assessment of disaster hazards for each region.

The regional risk level the Tokyo Metropolitan Government publishes is measured by evaluating the risk of building collapse, fire and evacuation (see “Survey Items” below).

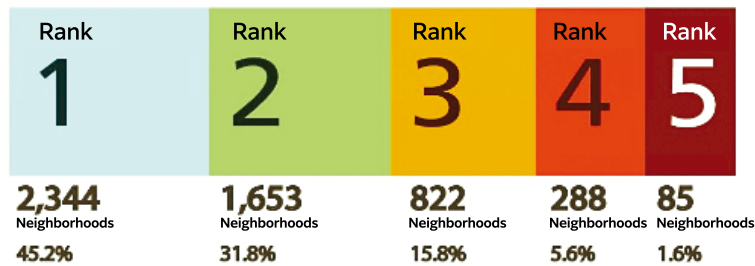
Survey Items

- **Building collapse risk level**
- **Fire risk level** (risk of fire spreading)
- **Comprehensive risk level** (combines the above two items, multiplied by the disaster-relief activity difficulty factor)
- **Disaster-relief activity difficulty factor** (degree of difficulty of activities during a disaster is assessed based on road development status)

There are five levels of regional risk, based on the degree of danger in each neighborhood, and are rated as follows.

The images at the bottom show the regional risk levels of Sumida City the Tokyo Metropolitan Government published in September 2022. They indicate that areas with high levels of risk are largely found in the northern part of the city.

Low risk ←————→ High risk



Legend

▭ Municipality boundary

▭ Neighborhood/district boundary

(1) Building collapse risk level



(2) Fire risk level



(3) Comprehensive risk level



Source: Tokyo Metropolitan Government Bureau of Urban Development

1-5 Learning about Past Major Earthquakes

1995 Great Hanshin-Awaji Earthquake Disaster (Southern Hyogo Prefecture Earthquake)

5:46 a.m., January 17, 1995

Magnitude: 7.3 Maximum seismic intensity: 7

Casualties: Deaths: 6,434; Missing: 3; Injured: 43,792; No. of totally destroyed buildings: 104,906

Buildings constructed under the old earthquake resistance standards from 1981 and before were severely damaged. Reconstruction meeting current earthquake resistance standards is still underway.



Collapsed Hanshin Expressway

2011 Great East Japan Earthquake Disaster (Tohoku Region Pacific Coast Earthquake)

2:46 p.m., March 11, 2011

Magnitude: 9.0 Maximum seismic intensity: 7

Casualties: Deaths: 19,729; Missing: 2,559; Injuries: 6,233; No. of totally destroyed buildings: 121,996

This was the largest earthquake ever recorded in Japan, and a huge tsunami hit the Pacific coast.

The Tokyo Metropolitan Area experienced a seismic intensity of 5+, which paralyzed transportation, and a large number of people were stranded.

Sumida City also had many stranded persons, and evacuation shelters were set up for them.



The Minami-Sanrikucho Disaster Prevention Office Building immediately after the earthquake



Sumida City Gymnasium, which served as an evacuation shelter

2018 Osaka earthquake

7:58 a.m., June 18, 2018

Magnitude: 6.1 Maximum seismic intensity: 6-

Casualties: Deaths: 6; Injuries: 462; No. of totally destroyed buildings: 21

The collapse of a concrete block wall at a school caused the death of a student. After this incident, Sumida City investigated all the block walls of municipal facilities.



Stone lanterns toppled by the earthquake

2018 Hokkaido Eastern Iburi Earthquake

3:07 a.m., September 6, 2018

Magnitude: 6.7 Maximum seismic intensity: 7

Casualties: Deaths: 43; Injuries: 782; No. of totally destroyed buildings: 469

A massive landslide damaged many houses and caused Japan's first area-wide blackout (all of Hokkaido).



A house destroyed by a landslide

2024 Noto Earthquake

4:10 p.m., January 1, 2024

Magnitude: 7.6 Maximum seismic intensity: 7

Casualties: Deaths: 672; Injuries: 1,405; No. of totally destroyed buildings: 6,536 (as of October 15, 2025)

Many old wooden houses and other structures with low earthquake resistance were damaged. A large fire also broke out.



Asaichi-dori Ave., where the fire broke out



1923 Great Kanto Earthquake Disaster

The earthquake that caused this disaster was estimated to have a magnitude of 7.9 (maximum seismic intensity 6), and struck on 11:58 a.m. on September 1, 1923. Approximately 370,000 buildings were damaged, and around 105,000 people were killed or went missing. The fire caused most of the human casualties, with an estimated ninety thousand people dead or missing due to the spreading flames. One fire at the former site of a clothing factory in Yokoamicho, Honjo Ward (currently part of Sumida City) alone killed around forty thousand residents who had evacuated there.

Citation: "2023 White Paper on Disaster Prevention," Cabinet Office



Charred ruins of the original Kokugikan building

Source: Sumida Heritage Museum

Fire at a former clothing factory

In 1922, the city of Tokyo purchased the former site of an army clothing factory with plans to develop a park. The Great Kanto Earthquake occurred in the midst of this process. Residents in the area took bedding and other household goods from their homes to the site—which was a vacant lot at the time—to evacuate.

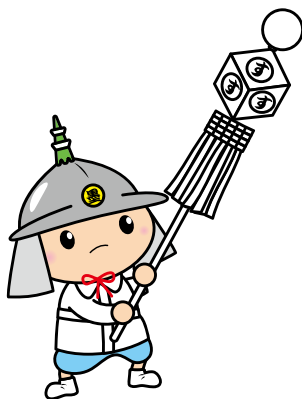
Since the earthquake struck around noon—while many people were cooking and strong winds caused by a typhoon were blowing—fires broke out in many places. Fanned by the strong winds, the flames reached the old clothing factory site from all directions, and sparks from the flames spread to the household goods the evacuees had brought. The intense flames created a huge fire tornado (fire whirl), which quickly engulfed the people and claimed many precious lives.

Reference: Tokyo-to Irei Kyokai website



Realistic portrayal of the big whirlwind headed toward Honjo Ishihara

Source: Great Kanto Earthquake Memorial Museum



Many factors reportedly contributed to this tragedy, including flammable household goods, collapsed wooden houses, strong winds, water supply (fire hydrant) disruptions, simultaneous fires, and the firefighting system of the time.

Great Kanto Earthquake 100th Anniversary Project: Sumida Bosai 100

The year 2023 marks a century since the Great Kanto Earthquake. Sumida City, which suffered major damage and casualties at the time, launched the Great Kanto Earthquake 100th Anniversary Project as part of its city promotion. The city combined various local efforts related to *bosai* (disaster preparedness) and developed a wide range of activities.

As part of this project, a disaster-preparedness symposium took place during the annual Disaster-Preparedness Fair in fiscal 2023. The symposium included lectures on the efforts of Shinpei Goto, who contributed to city planning after the Great Kanto Earthquake, and on the future of disaster preparedness in the local community.



2

Preparing for Earthquakes



1 Expand Your Earthquake Knowledge

2 Prepare for Earthquakes

3 Learn about Community Measures

4 If an Earthquake Strikes

5 Emergency Information

2-1 Evacuation

When you feel a strong tremor

When an Earthquake Strikes, Think Safety First

When an earthquake strikes, act to protect your own life first.

By Location

When you feel a tremor

At home: Protect your head and move away from windows and other glass items and furniture that may shatter or topple.

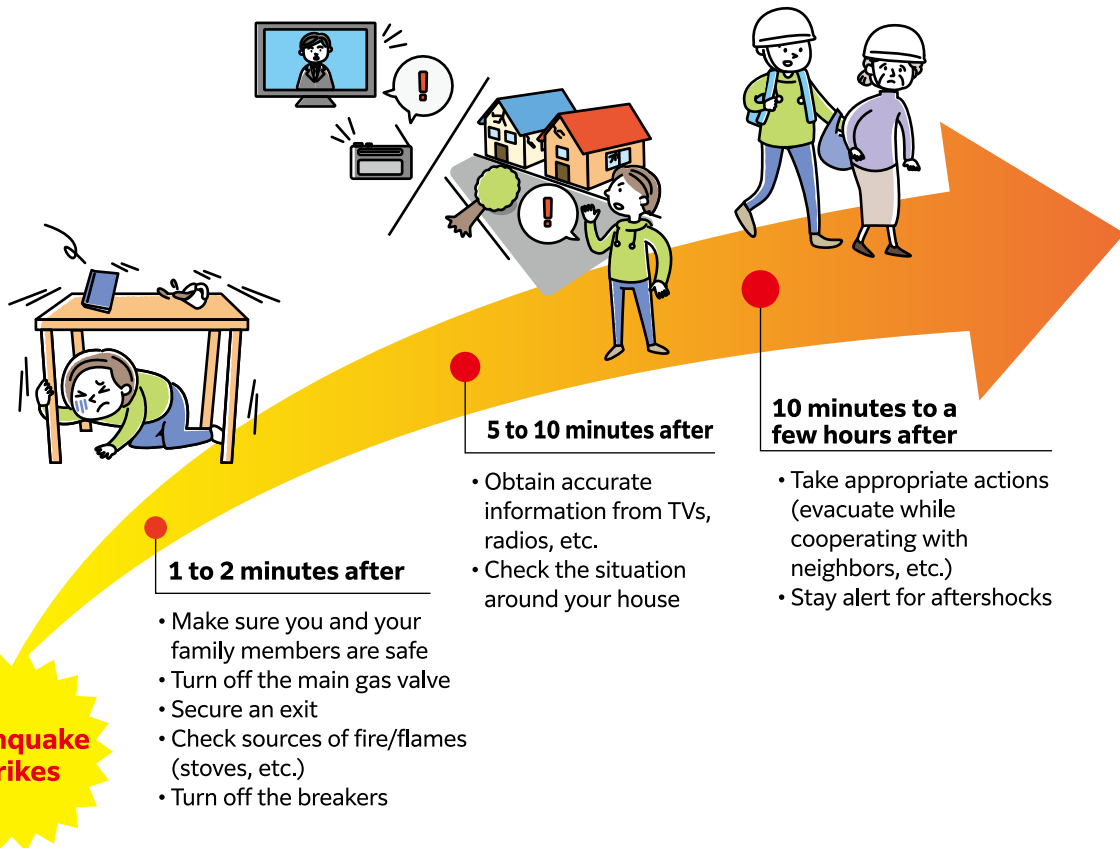
In an elevator: Press all the buttons and get off at the first floor it stops on.

While driving: Stop your vehicle on the left side of the road.

Note: When you get out of your vehicle to evacuate, leave your keys in the vehicle.



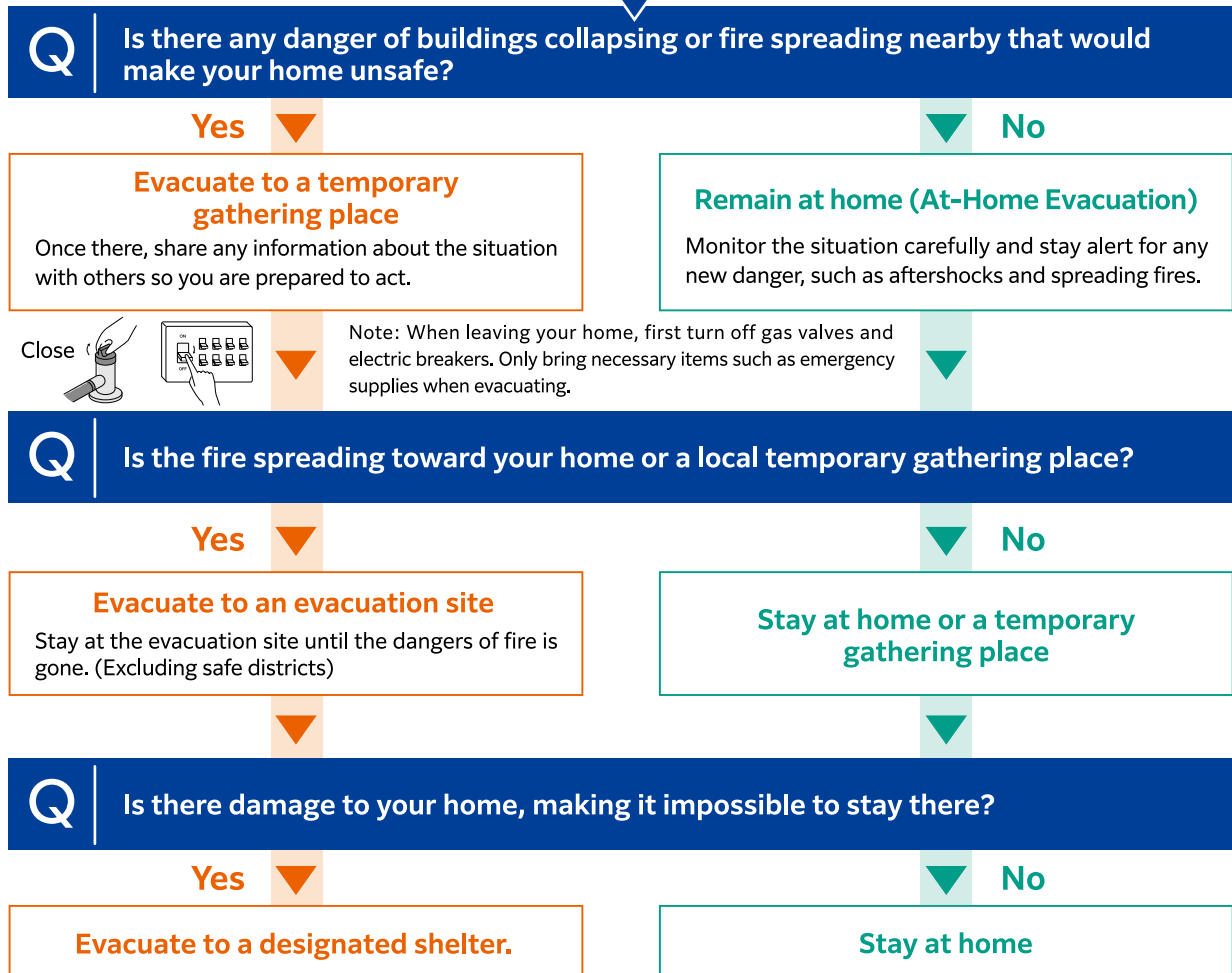
By Duration



Evacuation Procedures

If a large earthquake strikes and there is danger of buildings collapsing or fire spreading nearby, evacuate immediately. To ensure that you can evacuate calmly, please read the following to learn about appropriate evacuation procedures.

Large Earthquake Strikes!



Temporary gathering places

These locations are safe places to monitor the disaster from, and to use as a gathering place before going to an evacuation site. Parks and schools are often used as such places.



Designated shelters

These are locations where evacuees who cannot return home can live temporarily. Municipal elementary and junior high schools are often used for this purpose.



Evacuation site

These locations are safe to evacuate to when a fire is spreading. Large parks and other locations with minimal risk of fire spreading are typically designated as such places.



Safe districts (Kinshicho district)

These are areas where widespread evacuation is unnecessary, since the risk of fire spreading is low due to advanced fireproofing practices in the community.

Note: Please see the inserted disaster preparedness map for more information about the locations of evacuation sites and the like.

2-2 Preparations in Your Home

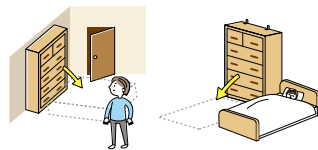
What you can do today!

To prepare for a large earthquake, think about where the safest place in your home is. Please read the following to learn how to make your home safer.

Examples of Household Preparations

Review your floor plan

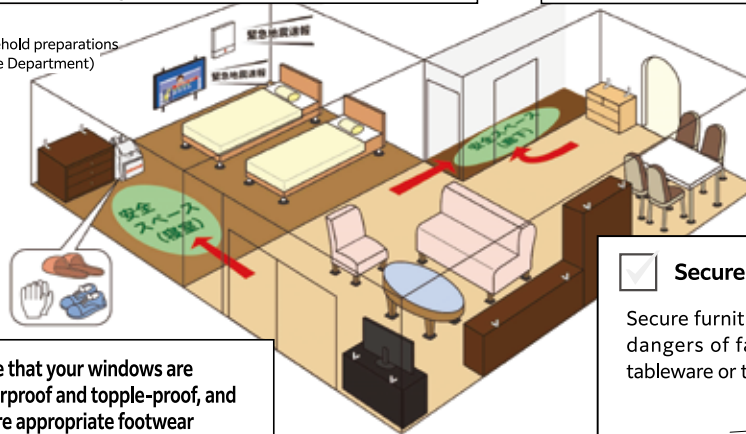
Avoid positioning furniture and the like in places that will be dangerous if it topples, such as in your bedroom, or where it could block your path.



Securing safe spaces

Remove furniture and unnecessary objects to make a **safe space**—an area with minimal danger of things falling, toppling or shifting—in your home.

Examples of household preparations
(Source: Tokyo Fire Department)



Ensure that your windows are shatterproof and topple-proof, and prepare appropriate footwear

To prevent injuries from broken glass, take measures such as applying shatterproof film to windows. It is also a good idea to prepare footwear for indoor use such as sneakers to avoid stepping on broken glass with bare feet.



Confirm contact methods

Decide with your family how to contact each other, choose gathering places, and share other information necessary when an earthquake strikes.

Secure furniture

Secure furniture to minimize the dangers of falling drawers and tableware or toppling cabinets.



It is also essential to check around your home for things that may become hazards if an earthquake hits.

Below are some of the things you should look out for.

Inspections around Your Home

Inspect the building where you live

Thoroughly inspect the building for cracks in the exterior walls and damage to the roof and windows to determine whether it is safe to remain at home if an earthquake occurs.



Be careful of block walls

Block walls may collapse when an earthquake strikes, and you may become trapped under them. Stay away from the block walls or buildings around your house that may be dangerous when you evacuate.

1 Expand Your Earthquake Knowledge

2 Prepare for Earthquakes

3 Learn about Community Measures

4 If an Earthquake Strikes

5 Emergency Information

2-3 Actions to Take If You Are Not Home

What Is a “Stranded Person”?

Many people come to Sumida City every day from outside the city for work, school, shopping, sightseeing and the like. If a major earthquake stops public transportation such as trains and buses, many people will be unable to get home from the affected areas. These people are referred to as “stranded persons.”



Do Not Try to Return Home Right Away When a Disaster Strikes

If many people rush to return home at the same time, certain locations will become crowded. That can increase the risks of crowd crushes and increase casualties if fires spread or objects fall. It will also hinder rescue and first aid, firefighting, the transportation of relief supplies, and other emergency response activities. The Tokyo Metropolitan Government has therefore enacted an ordinance on measures to avoid crowds of stranded persons.



Tokyo Metropolitan Government
Stranded persons crowd
suppression

When an Earthquake Strikes,

STAY for SAFETY

“Staying” Will Keep You Safe

If everyone rushes to return home at once...

- ✗ It will block ambulances and fire engines!
- ✗ Aftershocks and congestion can lead to more casualties!

To protect your loved ones and yourself, stay at your **workplace, school, temporary shelters** or anyplace you are if it is safe.

Prevent Crowds!

Slows the emergency response!

Increases casualties in a secondary disaster!