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[Appendix]

Appendix 1  If an earthquake occurs, what are your home’s If an earthquake occurs, what are your home’s .................................................................................. 12.13
(Household edition)

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**Learning from other earthquakes**

Many earthquakes occur in Japan and its surrounding seas.

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**Great East Japan Earthquake**

*2011.3.11 Mw9.0*  
Dead: 15,885, missing: 2,632, injured: 6,148, (as of April 8, 2011)  
The Great East Japan Earthquake was an inter-plate earthquake, like the Tokai earthquake expected to occur in the near future would be, At Mw9.0, it was the largest earthquake recorded in Japanese history. The earthquake hit Miyagi Prefecture in the northeast. The damage was also caused by large-scale liquefaction and subsidence.

**Southern Hyogo Prefecture Earthquake (Great Hanshin-Awaji Earthquake)**

*1995.1.17 M7.3*  
Dead: 6,434, missing: 3,851, injured: 47,092.  
Caused by movement of a fault directly beneath the metropolitan area (a semi-mountainous area), this earthquake struck Awaji Island, Kobe City, Hyogo Prefecture and Nishinomiya City with a seismic intensity of 7 on the Japanese scale. The earthquake occurred early in the morning, when most people were still asleep. As a result, many people were killed by collapsing buildings and trapped in them. Massive damage was also caused by large-scale liquefaction and crumbling railway structures and concrete buildings.

**Fukui Earthquake**

*1946.6.28 M7.1*  
Dead: 2,203, injured: 3,769, (as of April 1, 2017)  
The Fukui earthquake centered on the Fukui Plain and nearby regions. Building damage was extensive. The fire department of Fukui City was destroyed by fire. 8,851 buildings and infrastructural damage was widespread. Many villages were completely destroyed.

**Great Kanto Earthquake**

*1923.9.1 M7.9*  
Dead and missing: 105,808.  
The Great Kanto Earthquake was a large-scale earthquake of moderate magnitude that occurred in the Kanto region on September 1, 1923. The earthquake hit multiple cities that broke out afterwards. Disaster was widespread, with over 370,000 households fully or partially destroyed. A tsunami also struck Sagami Bay, with wave heights of 12m hitting Atami.

---

**Niigata Prefecture Chuetsu Earthquake**

*2004.10.23 M6.8*  
Dead: 68, injured: 4,805.  
A near field earthquake that occurred in a semi-mountainous area, with a seismic intensity of 7 on the Japanese scale recorded in the former isolated former village of Tanakacho, for the first time in the city. Widespread disruption from electricity, gas, water and other infrastructural damage in Tanakacho also occurred.

---

**Niigata Earthquake**

*1964.6.16 M7.5*  
Dead: 26, injured: 447.  
Damage centered on Niigata, Tomakomai and Akita, with 8,600 homes fully or partially destroyed, and 15,297 homes flooded. Gushing sand and water caused soil liquefaction that led to collapsing buildings and bridges and other damage. Oil storage tank fires also broke out, and were not extinguished until July 1.

**Miyagi-ken Oki Earthquake**

*1978.6.12 M6.4*  
Dead: 28, injured: 1,325.  
Damage centered on Miyagi Prefecture, with residential areas significantly affected. 16 of those killed and a large number of injuries were caused by large-scale liquefaction and crumbling concrete-block walls, gate posts and other such structures. 18 of those killed and a large number of injuries were caused by large-scale liquefaction and crumbling concrete-block walls, gate posts and other such structures.

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1 Learning from other earthquakes

Many earthquakes occur in Japan and its surrounding seas.

Great East Japan Earthquake

2011.3.11 Mw9.0

Dead: 15,885, missing: 2,632, injured: 6,148. (as of April 16, 2011)

The Great East Japan Earthquake was an inter-plate earthquake, like the 2003 Hokkaido Toho-Oki Earthquake. Most buildings were destroyed or partially destroyed. Oil storage tanks also exploded, and fires broke out after the earthquake. The fire outbreak was also caused by large-scale infrastructure and social disruption.

Southern Hyogo Prefecture Earthquake (Great Hanshin-Awaji Earthquake)

1995.1.17 M7.3

Dead: 6,934, injured: 43,692.

A near field earthquake that occurred in a semi-mountainous area, with a seismic intensity of 7 on the Japanese scale. Many buildings were destroyed or partially destroyed. Oil storage tank fires also broke out, and were not extinguished until July 1.

Fukui Earthquake

1948.6.28 M7.1

Dead: 15,885, missing: 2,632, injured: 43,692.

A near field earthquake that occurred in a semi-mountainous area, with a seismic intensity of 7 on the Japanese scale. Many buildings were destroyed or partially destroyed. Oil storage tank fires also broke out, and were not extinguished until July 1.

Nobi Earthquake

1944.4.17 M6.8

Dead: 26, injured: 447.

A near field earthquake that occurred in a semi-mountainous area, with a seismic intensity of 7 on the Japanese scale. Many buildings were destroyed or partially destroyed. Oil storage tank fires also broke out, and were not extinguished until July 1.

Niigata Earthquake

1964.6.16 M7.5

Dead: 3,769, injured: 22,203.

A near field earthquake that occurred in a semi-mountainous area, with a seismic intensity of 7 on the Japanese scale. Many buildings were destroyed or partially destroyed. Oil storage tank fires also broke out, and were not extinguished until July 1.

Miyagi-oki Earthquake

1978.6.12 M6.8

Dead: 28, injured: 1,325.

A near field earthquake that occurred in a semi-mountainous area, with a seismic intensity of 7 on the Japanese scale. Many buildings were destroyed or partially destroyed. Oil storage tank fires also broke out, and were not extinguished until July 1.
2) Magnitude (M) and Seismic Intensity

Magnitude (M) refers to the amount of energy of the earthquake itself. The Japanese seismic intensity scale, meanwhile, measures the degree of shaking experienced in specific locations.

<table>
<thead>
<tr>
<th>Measured intensity</th>
<th>Seismic intensity scale</th>
<th>People</th>
<th>Indoors</th>
<th>Outdoors</th>
<th>Wooden structures</th>
<th>Reinforced concrete</th>
<th>Lifelines</th>
<th>Soil bed slopes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>People do not notice quaking.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.5</td>
<td>Some people may feel slight quake.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Many people will feel the earth shake, and some others may be unable to keep balance.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>Standing will not be possible, and some may feel displaced.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Many people will feel the earth shake, and some others may be unable to keep balance.</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2.5</td>
<td>Standing will not be possible, and some may feel displaced.</td>
<td></td>
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</tr>
<tr>
<td>3</td>
<td>Many people will feel the earth shake, and some others may be unable to keep balance.</td>
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</tr>
<tr>
<td>3.5</td>
<td>Standing will not be possible, and some may feel displaced.</td>
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</tr>
<tr>
<td>4</td>
<td>Many people will attempt to take cover. Some may feel their support may be cut off even if the quake has not stopped.</td>
<td></td>
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</tr>
<tr>
<td>4.5</td>
<td>Standing will not be possible, and some may feel displaced.</td>
<td></td>
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</tr>
<tr>
<td>5-upper</td>
<td>Many people will attempt to take cover. Some may feel their support may be cut off even if the quake has not stopped.</td>
<td></td>
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</tr>
<tr>
<td>5-lower</td>
<td>Standing will not be possible, and some may feel displaced.</td>
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</tr>
<tr>
<td>6-lower</td>
<td>Standing will not be possible, and some may feel displaced.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6-upper</td>
<td>Standing will not be possible, and some may feel displaced.</td>
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</tr>
<tr>
<td>7</td>
<td>Standing will not be possible, and some may feel displaced.</td>
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<td></td>
</tr>
</tbody>
</table>

*The electricity, gas and water supply information in parentheses ( ) under the "Lifelines" column is included for reference purpose only.

1) The Tokai Earthquake Theory

The Tokai Earthquake Theory was released in August 1976. According to the theory, it would “not be surprising if a large earthquake happened tomorrow” in the Tokai area, particularly in the Shizuoka Prefecture region. Such an event would pose serious problems for the region. As a result, Shizuoka Prefecture began to implement earthquake countermeasures after the theory was released.

The earth’s surface is made up of dozens of hard plates that are distributed like a jigsaw puzzle. These plates shift at a speed of up to 10 cm per year, in accordance with movement of the Earth’s mantle. It is thought that the plates bump into and slide underneath each other (according to tectonic plate theory).

At the boundaries where these plates meet, large formations such as mountain ranges, ocean trenches and submarine mountain ranges are common, and earthquakes and volcanic activity may occur.

2) Large-Scale Earthquake Prediction

Plates Near the Japan Islands

Predicted Hypocenter of a Tokai Earthquake

How Inter-plate Earthquakes Occur

According to measurements by the Geospatial Information Authority, in the Tokai region, due to horizontal deformation Suruga Bay is contracting east-to-west at a speed of about 1 cm per year, and is subsiding on the west side due to vertical movement.

The graph shows measurements at a monitoring station at Omae Cape, benchmarked against a monitoring station in Kakegawa. While seasonal vertical movement does occur, the ground is subsiding steadily. When subsidence ceases and shifts to protrusion, it is believed that an earthquake will occur.

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<td>Some people notice quaking, and some people may be woken by shaking.</td>
<td></td>
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<td></td>
</tr>
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<td>1</td>
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<tr>
<td>2.5</td>
<td>People may notice the shake, and some may feel a slight shake.</td>
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<td></td>
</tr>
<tr>
<td>3</td>
<td>The shake will be alarming, and some people may be woken by shaking.</td>
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<tr>
<td>3.5</td>
<td>Many people will feel the shake, and some people may be woken by shaking.</td>
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<tr>
<td>4</td>
<td>People will be extremely alarmed, and some people may be woken by shaking.</td>
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<tr>
<td>4.5</td>
<td>The shake will be extremely alarming, and some people may be woken by shaking.</td>
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</tr>
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<td>5-lower</td>
<td>Many people will attempt to take cover, and some people may be woken by shaking.</td>
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</tr>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6-lower</td>
<td>Some people will feel the shake, and some people may be woken by shaking.</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6-upper</td>
<td>People will feel the shake, and some people may be woken by shaking.</td>
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<td></td>
</tr>
<tr>
<td>6.5</td>
<td>People will be considerably woken by shaking.</td>
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</tr>
<tr>
<td>7</td>
<td>People will be extremely woken by shaking.</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

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At the boundaries where these plates meet, large formations such as mountain ranges, ocean trenches and submarine mountain ranges are common, and earthquakes and volcanic activity may occur.

Predicted Hypocenter of a Tokai Earthquake

Plate Near the Japan Islands

How Inter-plate Earthquakes Occur

According to measurements by the Geospatial Information Authority, in the Tokai region, due to horizontal deformation Suruga Bay is contracting east-to-west at a speed of about 1 cm per year, and is subsiding on the west side due to vertical movement.

The graph shows measurements at a monitoring station at Omae Cape, benchmarked against a monitoring station in Kakegawa. While seasonal vertical movement does occur, the ground is subsiding steadily. When subsidence ceases and shifts to protrusion, it is believed that an earthquake will occur.

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Ground Subsidence at Omae Cape, Using Kakegawa as a Benchmark

<table>
<thead>
<tr>
<th>Plates Near the Japan Islands</th>
</tr>
</thead>
<tbody>
<tr>
<td>The predicted Tokai earthquake would be considered an inter-plate earthquake (also referred to as a subduction-zone earthquake). The boundaries of the Philippine Sea Plate and Eurasian Plate meet in the deepest area of Suruga Bay (known as the Shizuoka Trough).</td>
</tr>
</tbody>
</table>

(Source: Japan Meteorological Agency)

When the strain reaches its limits, the Eurasian Plate will bounce outward like a spring. An accompanying tsunami will also occur.
3) Reoccurring Large Earthquakes

In the ocean region stretching from Tokai to Kyushu, along the Suruga/Nankai Troughs where the Philippine plate sinks beneath the surface, the chance of a class M8-M9 earthquake occurring in the next 30 years in the Nankai Trough region (the area stretching from Hyogosan to Fujigawa) is predicted to be 60-70% (based on long-term assessments of earthquakes along the Nankai Trough).

Past precedence shows great variety in earthquakes occurring along the Nankai Trough (according to long-term evaluation of seismic activity along the trough by the Headquarters for Earthquake Research Promotion). A number of scenarios are plausible, including earthquakes occurring simultaneously in multiple locations stretching from Suruga Bay to the Shikoku coast, or occurring with a time delay between them.

Chronological and Spatial Distribution of Hypocenters of Previous Large Earthquakes along the Nankai Trough

Shizuoka Prefecture has taken a lesson from the events of the Great East Japan Earthquake. In order to utilize these teachings as a fundamental reference material for earthquake and tsunami countermeasures, the prefecture has revisited damage assumptions for the first time in 12 years, formulating the "Fourth Edition Earthquake Damage Assumptions."*

3 Damage Assumptions for Large-scale Earthquake

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Hypothetical Earthquake Event

<table>
<thead>
<tr>
<th>Category</th>
<th>Earthquakes occurring along the Suruga/Nankai Trough</th>
<th>Earthquakes occurring along the Sagami Trough</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1 earthquake/tsunami</td>
<td>Tokai/Tohoku earthquake Tokai/Tonankai earthquake</td>
<td>Taisho model Kanto earthquake</td>
</tr>
<tr>
<td></td>
<td>(Magnitude of around 8.7) (Magnitude of around 8.0-8.7)</td>
<td>(Magnitude of around 8.0)</td>
</tr>
<tr>
<td>Level 2 earthquake/tsunami</td>
<td>Nankai Trough large earthquake</td>
<td>Genroku model Kanto earthquake</td>
</tr>
<tr>
<td></td>
<td>(Magnitude of around 9)</td>
<td>(Magnitude of around 8.2)</td>
</tr>
</tbody>
</table>

Level 1 earthquake/tsunami

Earthquakes and tsunamis that occur with a relatively higher frequency and can result in significant damage.

Level 2 earthquake/tsunami

In light of all possibilities, the largest class earthquakes and tsunamis. Their frequency is extremely low, but they can result in massive damage.

Overview of 4th Ed. Earthquake Damage Assumptions

<table>
<thead>
<tr>
<th>Earthquakes occurring along the Suruga/Nankai Trough</th>
<th>Earthquakes occurring along the Sagami Trough</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>Level 2</td>
</tr>
<tr>
<td>Magnitude</td>
<td>Magnitude</td>
</tr>
<tr>
<td>Around 8.0-8.7</td>
<td>Around 9</td>
</tr>
<tr>
<td>Around 9</td>
<td>Around 8.0</td>
</tr>
<tr>
<td>Around 8.0</td>
<td>Around 8.2</td>
</tr>
<tr>
<td>Seismic intensity / region</td>
<td></td>
</tr>
<tr>
<td>344 km²</td>
<td>344 - 722 km²</td>
</tr>
<tr>
<td>42 km²</td>
<td>109 km²</td>
</tr>
<tr>
<td>Max. tsunami height</td>
<td></td>
</tr>
<tr>
<td>11 m</td>
<td>33 m</td>
</tr>
<tr>
<td>7 m</td>
<td>10 m</td>
</tr>
<tr>
<td>Human casualties (death)*</td>
<td></td>
</tr>
<tr>
<td>Earthquake</td>
<td>Approx. 16,000</td>
</tr>
<tr>
<td>Approx. 105,000</td>
<td>Approx. 3,000</td>
</tr>
<tr>
<td>Approx. 6,000</td>
<td></td>
</tr>
<tr>
<td>Of which tsunami</td>
<td></td>
</tr>
<tr>
<td>Approx. 9,000</td>
<td>Approx. 96,000</td>
</tr>
<tr>
<td>Approx. 2,900</td>
<td>Approx. 5,700</td>
</tr>
</tbody>
</table>

* Presuming winter or late night, with a low evacuation rate

Reference: Hypothetical Earthquake Events from Third Edition Earthquake Damage Assumptions

Level 1 earthquake/tsunami

Earthquakes and tsunamis that occur with a relatively higher frequency and can result in significant damage.

Level 2 earthquake/tsunami

In light of all possibilities, the largest class earthquakes and tsunamis. Their frequency is extremely low, but they can result in massive damage.

Overview of 4th Ed. Earthquake Damage Assumptions

<table>
<thead>
<tr>
<th>Earthquakes occurring along the Suruga/Nankai Trough</th>
<th>Earthquakes occurring along the Sagami Trough</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>Level 2</td>
</tr>
<tr>
<td>Magnitude</td>
<td>Magnitude</td>
</tr>
<tr>
<td>Around 8.0-8.7</td>
<td>Around 9</td>
</tr>
<tr>
<td>Around 9</td>
<td>Around 8.0</td>
</tr>
<tr>
<td>Around 8.0</td>
<td>Around 8.2</td>
</tr>
<tr>
<td>Seismic intensity / region</td>
<td></td>
</tr>
<tr>
<td>344 km²</td>
<td>344 - 722 km²</td>
</tr>
<tr>
<td>42 km²</td>
<td>109 km²</td>
</tr>
<tr>
<td>Max. tsunami height</td>
<td></td>
</tr>
<tr>
<td>11 m</td>
<td>33 m</td>
</tr>
<tr>
<td>7 m</td>
<td>10 m</td>
</tr>
<tr>
<td>Human casualties (death)*</td>
<td></td>
</tr>
<tr>
<td>Earthquake</td>
<td>Approx. 16,000</td>
</tr>
<tr>
<td>Approx. 105,000</td>
<td>Approx. 3,000</td>
</tr>
<tr>
<td>Approx. 6,000</td>
<td></td>
</tr>
<tr>
<td>Of which tsunami</td>
<td></td>
</tr>
<tr>
<td>Approx. 9,000</td>
<td>Approx. 96,000</td>
</tr>
<tr>
<td>Approx. 2,900</td>
<td>Approx. 5,700</td>
</tr>
</tbody>
</table>

* Presuming winter or late night, with a low evacuation rate

Disaster Emergency Message Dial

NTT Disaster Emergency Message Dial (171) is available for users to check on the well-being of family and relatives after a disaster occurs.

Recorded messages from persons affected by disaster can be accessed from Emergency Disaster Dial Centers located throughout the country.

When service is available:
- Phone services are often overwhelmed in a disaster.
- When phone lines are extremely busy due to a disaster.
- Service may be affected by power outages or other circumstances.
- (In the event of an emergency and within three days of the event, the service is available 24 hrs for trial purposes.)

Recording/replaying (dial number)
- To record 171-1-000-000-000-000-000-000-000-000-0...
- To replay 171-2-000-000-000-000-000-000-000-000-0...

Note: NTT home phone number in affected region


Reference: Hypothetical Earthquake Events from Third Edition Earthquake Damage Assumptions

Tokai earthquake (Magnitude 8) West Kansai Prefecture earthquakes (Magnitude 8)
3) Reoccurring Large Earthquakes

In the ocean region stretching from Tokai to Kyushu, along the Suruga/Nankai Troughs where the Philippine plate sinks beneath the surface, the chance of a class M6-M9 earthquake occurring in the next 30 years in the Nankai Trough region (the area stretching from Hyoganoada to Fujigawa) is predicted to be 60-70% (based on long-term assessments of earthquakes along the Nankai Trough).

Past precedence shows great variety in earthquakes occurring along the Nankai Trough (according to long-term evaluation of seismic activity along the trough by the Headquarters for Earthquake Research Promotion). A number of scenarios are plausible, including earthquakes occurring simultaneously in multiple locations stretching from Suruga Bay to the Shikoku coast, or occurring with a time delay between them.

Chronological and Spatial Distribution of Hypocenters of Previous Large Earthquakes along the Nankai Trough

<table>
<thead>
<tr>
<th>Year</th>
<th>684 Hakuho (Tenmu) Earthquake</th>
<th>887 Ninna Earthquake</th>
<th>1096 Echigo-Tokai Earthquake</th>
<th>1099 Kowa-Nankai Earthquake</th>
<th>1361 Shohe (Koan)-Tokai Earthquake</th>
<th>1361 Shohe (Koan)-Nankai Earthquake</th>
<th>1598 Mei Earthquake</th>
<th>1605 Keicho Earthquake</th>
<th>1707 Hoei Earthquake</th>
<th>1854 Asei-Tokai Earthquake</th>
<th>1854 Asei-Nankai Earthquake</th>
<th>1946 Showa-Nankai Earthquake</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Confirmed hypocenter</td>
<td>Regarded as likely hypocenter</td>
<td>Possible hypocenter</td>
<td>Theorized as hypocenter</td>
<td>Earthquake with high likelihood of tsunami</td>
<td>Earthquake occurring in Hyuga-Nada Plate (class M7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shizuoka Prefecture has taken a lesson from the events of the Great East Japan Earthquake. In order to utilize these teachings as a fundamental reference material for earthquake and tsunami countermeasures, the prefecture has revisited damage assumptions for the first time in 12 years, formulating the "Fourth Edition Earthquake Damage Assumptions."*

### Hypothetical Earthquake Event

#### Level 1 earthquake/tsunami

**Earthquakes and tsunamis that occur with a relatively higher frequency and can result in significant damage.**

**Level 2 earthquake/tsunami**

**Earthquakes that occur with a relatively lower frequency and can result in significant damage.**

#### Level 3 Earthquake/tsunami

**Earthquakes occurring along the Sagami Trough**

<table>
<thead>
<tr>
<th>Category</th>
<th>Earthquakes occurring along the Suruga/Nankai Trough</th>
<th>Earthquakes occurring along the Sagami Trough</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level 1 earthquake/tsunami</strong></td>
<td>Tokai earthquake/Tokai/Tonankai earthquake*</td>
<td>Taisho model Kanto earthquake</td>
</tr>
<tr>
<td><strong>Level 2 earthquake/tsunami</strong></td>
<td>Nankai Trough large earthquake</td>
<td>Genroku model Kanto earthquake</td>
</tr>
</tbody>
</table>

* In line with revisions underway to the 2003 Central Disaster Management Council Model for earthquakes occurring in Japan along the Suruga and Nankai Troughs, level 1 earthquakes were examined according to the fundamental cases from the Nankai Trough Large Earthquake Model (Central Office, 2012) and level 1 tsunamis were examined according to the 2003 Central Disaster Management Council Model. Should new models be released their contents will be reviewed and damage assumptions will be recalculated if necessary.

**Overview of 4th Edit. Earthquake Damage Assumptions**

<table>
<thead>
<tr>
<th>Category</th>
<th>Earthquakes occurring along the Suruga/Nankai Trough</th>
<th>Earthquakes occurring along the Sagami Trough</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level 1</strong></td>
<td><strong>Level 2</strong></td>
<td><strong>Level 1</strong></td>
</tr>
<tr>
<td><strong>Magnitude</strong></td>
<td>Around 8.0-8.7</td>
<td>Around 9</td>
</tr>
<tr>
<td><strong>Seismic intensity / region</strong></td>
<td>344 km²</td>
<td>344-732 km²</td>
</tr>
<tr>
<td><strong>Max. tsunami height</strong></td>
<td>33 m</td>
<td>33 m</td>
</tr>
<tr>
<td><strong>Human casualties (death)</strong></td>
<td>Approx. 16,000</td>
<td>Approx. 105,000</td>
</tr>
</tbody>
</table>

* Presuming winter or late night, with a low evacuation rate.
**Estimated Disruption to/Recovery of Lifelines**

<table>
<thead>
<tr>
<th>Service</th>
<th>Disruption</th>
<th>Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td>After 4 days</td>
<td>After 1 week</td>
</tr>
<tr>
<td>Telephones</td>
<td>Approximately 80%</td>
<td>Around 1 week</td>
</tr>
<tr>
<td>Water supplies</td>
<td>Around 80%</td>
<td>Around 4-6 weeks</td>
</tr>
<tr>
<td>Sewage</td>
<td>Around 70-80%</td>
<td>After inspection and repair</td>
</tr>
<tr>
<td>Gas</td>
<td>Around 80%</td>
<td>Around 2-5 weeks</td>
</tr>
<tr>
<td>Elevators</td>
<td>Around 80%</td>
<td>After repair</td>
</tr>
</tbody>
</table>

*Presuming an earthquake occurring along the Suruga/Nankai Troughs, Fourth Edition Earthquake Damage Assumptions*

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**Tsunamis Predictions for Shizuoka Prefecture**

Information on hazard spots for expected tsunamis, landslides and other dangers can be found posted throughout cities and towns. Some municipalities have also created “Zard Maps” that display danger areas in the region.

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**4 Tokai Earthquake Early Prediction and Warning**

1) **Earthquake Prediction**

In general, "earthquake prediction is extremely difficult". However, in the case of a Tokai earthquake, due to the large number of observation stations in place, it is believed that some magnitude 8 class subduction-zone earthquakes could be predicted shortly before they actually occurred.

For Tokai earthquake prediction, 24 hour observation is carried out using seismographs and other devices. Changes in observed data is then analyzed to determine whether an imminent earthquake may be indicated. Observation technology for early prediction of Tokai earthquakes grows more sophisticated each year. But currently, while some earthquakes can be predicted immediately before they occur, Tokai earthquakes can also occur suddenly with no advance prediction.

- The Tokai earthquake survey information (level blue): Information released as ‘blue level’ is divided into two categories: "regular" and "extra."

Extra This level indicates that anomalous data has been observed.

Regular This level indicates the release of survey results evaluated by the monthly Earthquake Assessment Committee.

- The Tokai earthquake caution information (level yellow): Signs point to an increased likelihood of impending earthquake.

- The Tokai earthquake prediction information (level red): The risk of an earthquake is imminent (earthquake warning is released).

2) **Societal Conditions**

<table>
<thead>
<tr>
<th>Service/Category</th>
<th>During Tokai earthquake advisories</th>
<th>During earthquake warnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity/gas/water</td>
<td>Available (store up tap water)</td>
<td>Available but should be limited in use</td>
</tr>
<tr>
<td>Telphones</td>
<td>Available (however calls may become restricted if the number of users spikes dramatically)</td>
<td>Available (the possibility of calls becoming restricted due to a spike in users is high)</td>
</tr>
<tr>
<td>Trains</td>
<td>Generally operate as normal</td>
<td>Will travel to the nearest safe bus stop, etc. and then stop</td>
</tr>
<tr>
<td>Buses</td>
<td>Generally operate as normal</td>
<td>Will travel to the nearest safe bus stop, etc. and then stop</td>
</tr>
<tr>
<td>Roads</td>
<td>Normally accessible to traffic</td>
<td>In order to ensure evacuation routes, traffic will be restricted on main roads, etc. (reduced speeds)</td>
</tr>
<tr>
<td>Department stores</td>
<td>Sections or elements will cease operation</td>
<td>Cease operations (however, certain stores with high earthquake-resistance may be able to continue operating)</td>
</tr>
<tr>
<td>Convenience stores, etc.</td>
<td>Business as usual</td>
<td>Certain stores with high earthquake resistance will continue operating</td>
</tr>
<tr>
<td>Banks</td>
<td>Business as usual</td>
<td>Cease operations (however, some ATMs may still be available)</td>
</tr>
<tr>
<td>Hospitals, etc.</td>
<td>Will generally restrict outpatient care (excluding emergencies)</td>
<td>Cease outpatient care (excluding emergencies)</td>
</tr>
<tr>
<td>Schools/nurseries</td>
<td>In areas subject to evacuation, children may be sent home or handed over to guardians as appropriate to safety (children at special need schools, etc. may be sent home earlier)</td>
<td>Schools will be closed and children will be sent home or handed over to guardians (some faculty may remain on standby)</td>
</tr>
</tbody>
</table>

3) **What should you do?**

- **Check TVs and radios for information**
  - Listen to TV or radio for accurate information

- **Pick up children (advisories)**
  - Keep in regular contact with children’s schools

- **Double-check inside your home (advisories)**
  - Grab a Pets, family emergency kit, a roll of toilet paper, water, and other essentials

- **Double-check emergency supplies (advisories)**
  - Evacuate swiftly from areas subject to evacuation and, if possible, take an emergency kit.
  - Have roles and a plan for your family to follow in an emergency.

- **Evacuate swiftly from designated hazardous locations (warnings)**
  - Evacuate swiftly from areas designated as hazardous locations, taking an emergency kit if possible.

- **Take countermeasures to prevent fire (warnings)**
  - If you find a fire, call 119 or 118 for help.

---

**Tsunamis occurring along Suruga/Nankai Troughs**

Predicted heights of large tsunamis caused by a level 2 earthquake, released June 27, 2013

---

**Earthquake, tsunami, evacuate immediately!**

- Near coastal areas, when you feel tremors
  - Move immediately to an elevated location
  - Activate an escape plan

- When a tsunami warning is sounded
  - When a tsunami advisory is sounded
  - When an earthquake warning is released

---

**Electrical safety**

- Unplug unnecessary equipment
- Turn off gas, and close valves
- Take countermeasures to prevent fire

**Other take countermeasures**

- People near the coast should
  - Have roles and a plan for your family to follow in an emergency
- People near the coast should
  - Have roles and a plan for your family to follow in an emergency
## Earthquake Prediction

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</tr>
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## Tsunami Predictions for Shizuoka Prefecture

Tsunamis occurring along Suruga/Nankai Troughs

- Predicted height of large tsunamis caused by a level 2 earthquake, released June 27, 2013

### Tsunami Predictions

**Electricity**
- Directly after the disaster electricity will be cut off to around 90% of customers in the prefecture, and will remain off to slightly less than 10% 4 days afterward. Emergency repair will require around 1 week.

**Telephones**
- Around 90% of land lines within the prefecture will become unusable directly after the disaster, and approximately 81% will remain unusable the following day. Emergency repair will require around 1.2 weeks. Due to non-transmission and power outages at base stations, it will be extremely difficult to connect to mobile networks in the prefecture the day afterward. Emergency repair will require around 2-4 weeks. Additionally, due to a drastic spike in the number of users attempting to make calls, networks will be congested directly after the disaster and connection will be difficult.

**Water supplies**
- Directly after the disaster water supplies will be cut off to nearly the entire prefecture, and will remain cut off for more than 50% of the population even after 1 week. Emergency repairs will require around 4-6 weeks.

**Sewage**
- The day after the disaster around 50-70% of the prefecture’s serviced population will experience disruption to service, and drainage problems will arise in areas throughout the prefecture. Emergency repairs will require around 2-5 weeks.

**Gas**
- Directly after the disaster around 70-80% of utility gas supplies in the prefecture will be cut off. Emergency repairs will require around 4-6 weeks. Around 30-40% of UF gas customers will experience disruption directly after the disaster. However, after inspection, quick restoration is possible.

**Elevators**
- Should an earthquake of seismic intensity 4 or higher occur, nearly all elevators will stop. Elevators will become usable again once electricity is restored and inspections are completed.

### Emergency Supplies

- Double-check emergency supplies (advisory)

- **Earthquake** Prepare for your family and take the following actions:
  - Ensure that furniture, cupboards, etc. are secure. Ensure that entrances remain passable.
  - Unplug unnecessary electrical equipment.
  - Unplug gas cookers and turn off gas if safe to do so. Turn off electrical power switches and gas meters.
  - Call an emergency center if you have difficulty moving.

- **Tsunami** Take countermeasures to prevent fire (warning), take control measures for water (warning), take control measures for earthquake (warning) (tide gauge, tsunami warning, earthquake warning)
5 What if an earthquake occurs suddenly?

1. Strong tremors may continue for 2-3 minutes. Do not panic and run outside. Stay calm.
   - After an earthquake occurs, ensuring your own physical safety should be your first priority!
   - After the original quake, aftershocks may occur.
   - Treat minor injuries sustained by your family on your own.

2. Do not place items near fire sources.
   - If a fire does break out, do not panic. Carry out first-aid firefighting measures. Ensure that the fire is extinguished at its source.
   - Has a fire broken out nearby? Enlist the help of neighbors, and work together to extinguish flames!

3. If leaving the house, leave behind a sign or memo so that people know the status and whereabouts of you and your family.
   - Turn off gas and electrical breakers.
   - Do not forget to fasten doors.

4. Be wary of false rumors. Takes steps to obtain the latest accurate information.
   - Refrain from using telephones as much as possible. To let people know that you are safe and to check on others’ wellbeing, use the Disaster Emergency Message Dial (171) service (or the Disaster Message Board Service from mobile phones).

5. Refuge shelters are a shared community. Follow established rules, work together, and help one another out.
   - Watch over disabled and injured persons.

6. Relief supplies should not be expected for several days after an earthquake. At times such as these the importance of disaster preparations will become apparent. You may need to rely on emergency supplies and rations for several days.

6 Early Earthquake Warning

1) Earthquake Early Warnings

Earthquake Early Warnings are released by the Japan Meteorological Agency when an earthquake of a seismic intensity 5 or lower on the Japanese scale occurs. Warnings are sent via TV, radio, mobile phones and other media to regions where large quakes (4 or greater) may be expected.

Early Earthquake Warnings are only sent after tremors at the hypocenter have been detected. As a result, strong tremors may be experienced in a matter of only seconds after a warning is received. For locations close to the hypocenter, tremors may begin before a warning can be issued.

2) What to do if an Early Earthquake Warning is released

It is important that you stay calm and ensure your own safety. Refer to the Tips on What to Do below, and consider in advance what you should do during a warning.

At home
- Protect your head by taking shelter beneath a desk or other sturdy structure.
- If fire breaks out, don’t panic, and rush outside.
- Don’t try to turn off flames when conditions are disadvantageous.

In crowded facilities
- Follow directions given by staff/officials.
- Act calmly.
- Do not panic and rush for the exit.

While driving
- Don’t slow down or panic.
- Turn on your hazard lamps and be careful of surrounding cars.
- Don’t hit your brakes suddenly. Slow down gradually.
- If the quake feels large, park onto the left side of the road.

Near mountains and cliffs
- Be wary of strong tremors.
- Be wary of falling rocks and landslides.

While riding trains/buses
- Hold firmly to handrails.
- If the earthquake warning sound occurs, sit firmly, and do not rush to the exit.

In elevators
- Stop the elevator at the nearest floor and get off immediately.

Tips on What to Do During an Early Earthquake Warning

Stay calm, consider your soundings, and ensure your own safety!
5 What if an earthquake occurs suddenly?

1. Strong tremors may continue for 2-3 minutes. Do not panic and run outside. Stay calm.
   - After an earthquake occurs, ensuring your own physical safety should be your first priority!
   - After the original quake, aftershocks may occur.
   - Treat minor injuries sustained by your family on your own.

2. Do not place items near fire sources.
   - If a fire does break out, do not panic. Carry out first-aid firefighting measures. Ensure that the fire is extinguished at its source.
   - Has a fire broken out nearby? Enlist the help of neighbors, and work together to extinguish flames!

3. If leaving the house, leave behind a sign or memo so that people know the status and whereabouts of you and your family.
   - Turn off gas and electrical breakers.
   - Do not forget to fasten doors.

4. Be wary of false rumors. Takes steps to obtain the latest accurate information.
   - Refrain from using telephones as much as possible. To let people know that you are safe and to check on others’ wellbeing, use the Disaster Emergency Message Dial (171) service (or the Disaster Message Board Service from mobile phones).

5. Refuge shelters are a shared community. Follow established rules, work together, and help one another out.
   - Watch over disabled and injured persons.

6. Reliefs supplies should not be expected for several days after an earthquake. At times such as these the importance of disaster preparations will become apparent. You may need to rely on emergency supplies and rations for several days.

6 Early Earthquake Warning

1) Earthquake Early Warnings

Earthquake Early Warnings are released by the Japan Meteorological Agency when an earthquake of seismic intensity 5-lower or higher on the Japanese scale occurs. Warnings are sent via TV, radio, mobile phones and other media to regions where large quakes (4 or greater) may be expected.

Earthquake Early Warnings are only sent after tremors at the hypocenter have been detected. As a result, strong tremors may be experienced in a matter of only seconds after a warning is received. For locations close to the hypocenter, tremors may begin before a warning can be issued.

2) What to do if an Early Earthquake Warning is released

It is important that you stay calm and ensure your own safety. Refer to the Tips on What to Do below, and consider in advance what you should do during a warning.

At home
- Protect your head by taking shelter beneath a desk or other sturdy structure.
- If you feel the quake, stop doing what you are doing to evaluate the situation. If the shake feels large, park onto the left side of the road.
- If a fire breaks out, do not panic.
- Act calmly.
- Follow directions given by staff/officials.

In crowded facilities
- Follow directions given by staff/officials.
- Do not panic, and rush for the exit.

When outside (streets/towns)
- Be wary of strong tremors.
- Do not panic and rush outside.

Tips on What to Do During an Early Earthquake Warning

Stay calm, consider your soundings, and ensure your own safety!

After an Early Earthquake Warning sounds, strong tremors may occur in a matter of only seconds. It is important to ensure your own safety during this time. Please take the following precautions.

While riding trains/buses
- Hold on firmly to handrails.

In elevators
- Stop the elevator at the nearest floor and get off immediately.

Near mountains and cliffs
- Be wary of falling rocks and landslides.

(Source: Japan Meteorological Agency materials)
7 Emergency Supplies/Rations

When preparing emergency supplies, consider what items your family will need. Create an Emergency Supplies List for your household and check it regularly. Place supplies in an emergency bag and store it somewhere where it can be retrieved immediately. After preparing supplies, keep them separate from regularly used items.

1) Emergency Supplies Checklist (examples)

- Portable radio
- Flashlight
- Spare batteries
- Whistles
- Emergency rations (3 days)
- Drinking water
- Tissue paper/toilet paper
- Knife
- Spoon/chopsticks/cup
- Gloves
- Underwear/socks
- First aid/medicines
- Cash (inc. coins)
- Towels
- Hardhat/disaster hood
- Writing implements/notebook (permanent marker, etc.)
- Raingear
- Blankets/sleeping bag
- Plastic bags
- Backpack
- Sanitary products

2) Emergency Rations Checklist (examples)

In order to continue supporting yourself at home, you should have 1 week of both water and food set aside.

- Drinking water
  - 3L per day x 7 days = 21L

- Food
  - 3 meals x 7 days = 21 meals

- Portable gas stove/gas cartridges
  - A portable gas stove will allow you to prepare hot food in case of an emergency.

This method of storing rations involves using everyday and emergency stock supplies that you consume regularly. Having a system in place to use older supplies first will allow you to rotate stock more effectively. Space should be made at home to store adequate drinking water.

Examples of Foodstuffs

- Roll-
orred
- canned goods, instant ramen, pastas, seaweed, dried foods, root vegetables (vegetables that can be stored at room temperature), freeze-dried vegetables, dry fruits, etc.

- You are not familiar eat, you will chew that is not delicious meal. Precisely because emergency, what you are accustomed to eat from the usual, favorite food is to stabilize the feeling will be the force to survive the difficulties.

3) Emergency Rations Method

- Estimate for 1 week (per person)

- Chocolate
- Powdered milk
- Dried fruits
- Canned foods

4) Emergency Rations Storing

- Store rations in an airtight container.
- Store rations in a cool, dry place.

5) Emergency Ration Carried Out

- Be sure to keep a fire extinguisher available, and learn how to use it.
- Dry chemical fire extinguishers are suitable for extinguishing any type of fire. Keep fire extinguishers and other fire prevention tools in an easy to see and readily accessible location.
- Always keep several buckets filled with water on hand.
- Do not leave flammable items on or near burners.
- Take precautions to keep gas/kerosene containers and similar items from overturning.
- Ensure that all family members are aware of where gas spigots and electrical breakers are located, and know how to use them.

8 Fire Prevention Measures

- Participate in disaster drills with your entire family.

- Early-mid March (inc. Mar. 11), Tsunami Countermeasures Period – Tsunami drills along coastal zones
- Aug. 30 – Sep. 5, Disaster Prevention Week – Comprehensive disaster drills on Disaster Preparedness Day (September 1)
- Nov. 5, Tsunami Disaster Prevention Day – Prefecture-wide disaster prevention exhibits and lecture, etc.
- Nov. 5, Tsunami Disaster Prevention Day – Drills related to tsunami disaster prevention
- Jan. 15-21, Disaster Prevention Volunteer Week – Drills in anticipation of a sudden, large-scale earthquake

- If a large-scale disaster occurs, proactively participate in first-aid firefighting and rescue and relief activities.
- In local communities there are a range of people who participate in disaster prevention activities. In times of emergency, it is important to cooperate and work as one body in combatting disaster.

9 Participate in Local Disaster Prevention Activities

You are responsible for protecting your own life, but everyone is responsible for protecting the community. Local volunteer disaster prevention organizations are made up of individual citizens.

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10 Local Disaster Prevention Organizations

In order to protect your own and your family’s lives in the event of a large scale earthquake, such as a Tokai earthquake, there are a variety of precautions that should be taken on a regular basis. However, there are limits to how much any one person or family can do. It is important for neighborhoods to cooperate in an organized fashion to combat disaster.

Local disaster prevention organizations exist to bring community members together for disaster prevention, not only in times of disaster but on a regular basis.

1) Activities Carried out Regularly/During Disaster

- Local safety inspections – Safety patrols, surveying for hazardous spots, etc.
- Disaster prevention awareness – Vulnerability of community to disaster, household countermeasures, identifying vulnerable individuals, etc.
- Disaster prevention drills – Planning and carrying out drills, practicing first-aid, etc.
- First-aid firefighting – Appeals for fire prevention measures, first-aid firefighting, fire alertness
- Rescue and relief – Rescue and relief, cooperation with disaster prevention organizations
- First-aid/transport – First-aid, use of home medicines, checking status of destination hospitals
- Collecting/transmitting informations – Collecting and transmitting information, guarding against false rumor, reporting damage and injuries to disaster prevention organizations
- Evacuation guidance – Soundings evacuations, guidance for safe evacuation measures, checking names of evacuees
- Operating/managing refuge shelters – Helping to distribute supplies, emergency rice rations, fixing shelter rules
7 Emergency Supplies/Rations

When preparing emergency supplies, consider what items your family will need. Create an Emergency Supplies List for your household and check it regularly. Place supplies in an emergency bag and store it somewhere where it can be retrieved immediately. After preparing supplies, keep them separate from regularly used items.

1) Emergency Supplies Checklist (examples)

- Portable radio
- Flashlight
- Spare batteries
- Whistles
- Emergency rations (3 days)
- Drinking water
- Lighter/matches
- Tissue paper/toilet paper
- Knife
- Spoon/chopsticks/cup
- Gloves
- Underwear/socks
- Copies of health insurance card/license/bank book
- Writing implements/notebook
- Raingear
- Blankets/sleeping bag
- Backpack
- Sanitary products
- First aid/hospital
- Medicines
- Cash (inc. coins)
- Towels
- Hardhat/disaster hood
- Plastic bags
- Hard hat

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2) Emergency Rations Checklist (examples)

In order to continue supporting yourself at home, you should have 1 week of both water and food set aside. The following are examples of foodstuffs.

- Portable gas stove/gas cartridges
- A portable gas stove will allow you to prepare hot food in case of an emergency.

This method of storing rations involves using everyday and emergency food supplies that you consume regularly. Having a system in place to use older supplies first will allow you to rotate stock more effectively. Space should be made at home to store adequate drinking water.

Estimate for 1 week (per person)

- 3L per day x 7 days = 21L
- 3 meals x 7 days = 21 meals

Rolling stock method (to be adopted)

Examples of Foodstuffs
- Noodles, canned goods, instant ramen, pastas, seasonings, dried foods, root vegetables (vegetables that can be stored at room temperature), frozen/dried vegetables, dry fruits, etc.

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8 Fire Prevention Measures

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- Aug. 30 – Sep. 5, Disaster Prevention Week – Comprehensive disaster drills on Disaster Preparedness Day (September 1)
- Nov, Earthquake Disaster Prevention Enhancement Month – Prefecture-wide disaster prevention exhibits and lecture, etc.
- Nov. 5, Tsunami Disaster Prevention Day – Drills related to tsunami disaster prevention
- 1st Sun. of Dec. Local Disaster Prevention Day – Drills in anticipation of a sudden, large-scale earthquake
- Jan. 15-21, Disaster Prevention Volunteer Week – January 17 is Disaster Prevention and Volunteer Day

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- In local communities there are a wide range of people who participate in disaster prevention activities. In times of emergency, it is important to cooperate and work as one body in combatting disaster.

10 Local Disaster Prevention Organizations

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Regularly
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- Disaster prevention drills – Planning and carrying out drills, practicing first-aid, etc.
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During disaster
- First-aid firefighting – Appeals for fire prevention measures, first-aid firefighting, fire alarmness
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- First-aid/firefighting – First-aid, use of home medicines, checking status of destination hospitals
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- Evacuation guidance – Sounding evacuations, guidance for safe evacuation measures, checking names of evacuees
- Operating/managing refuge shelters – Helping to distribute supplies, emergency rice rations, fixing shelter rules
Dig deeper and you’ll see

If an earthquake occurs, what are your home’s danger spots?!

Concrete-block wall is broken

If an earthquake occurs, what are your home’s danger spots!?

Be safe, be prepared.

Make a map of your own home!

It will help you identify danger spots.

The microwave...

Food will be scattered

The cupboard door will open and all of the cutlery will fall out

The caster-wheeled furniture will roll around the room

The floor will be covered with broken dishes, etc.

The refrigerator will tip over

The shoe closet will fall over and block the front door

The window glass will break and rain down on the area

The bookshelf will tip over and all the books will come flying out

The dresser will fall over onto the bed

This room is free of furniture and items that could fall, and is safe

The television will go flying

During previous disasters, electrical fires occurring after electricity is restored have been common.

If evacuating after an earthquake, be sure to switch off breakers before leaving. And don’t forget to close gas spigots.

In order to be able to continue living in your home after an earthquake, consider the following points:

Exiting your house after an earthquake may be difficult due to fallen furniture, broken glass and other dangers inside the house. Consider evacuation routes from regularly used rooms to the outside.

Draw a floor plan

Look for hazardous spots

Confirm the location of gas spigots, etc.

Exit your house after an earthquake may be difficult due to fallen furniture, broken glass and other dangers inside the house. Consider evacuation routes from regularly used rooms to the outside.

Confirm how vulnerable your home is!

What rooms will you be living in?

What will you do for food and water?

What will you deal with toilet situations?

How will you keep warm?

Appendix 1

Check & ensure you’re safe!

Follow the steps to the right to check how vulnerable your home is!

Step 1: Draw a floor plan

Step 2: Look for hazardous spots

Step 3: Confirm the location of gas spigots, etc.

Step 4: Confirm your evacuation route

Step 5: Consider how you will survive after an earthquake

Confirm the location of electrical breakers, gas spigots, microcomputer meters and other safety devices.
Dig deeper and you’ll see
If an earthquake occurs, what are your home’s danger spots!??

Concrete-block wall is broken
If an earthquake occurs, what are your home’s danger spots!?

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Appendix 1

Step 1
Draw a floor plan

Step 2
Look for hazardous spots
Refer to the page to the left to check your home for hazardous spots.

Step 3
Confirm the location of gas spigots, etc.
Confirm the location of electricity breakers, gas spigots, microcomputer meters and other safety devices.

Step 4
Confirm your evacuation route
Exiting your house after an earthquake may be difficult due to fallen furniture, broken glass and other dangers inside the house. Consider evacuation routes from regularly used rooms to the outside.

Step 5
Consider how you will survive after an earthquake
In order to be able to continue living in your home after an earthquake, consider the following points:
☆ What will you deal with toilet situations?
☆ How will you keep warm?
☆ What will you do for food and water?
☆ What rooms will you be living in?

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In order to be able to continue living in your home after an earthquake, consider the following points:

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Refer to the page to the left to check your home for hazardous spots.

Draw a floor plan of your home using the grid below.

How to fix dressers

Fix tall furniture to lintels using wire or metal brackets
Screw in eye bolts with the hook facing upward.
Screw in wire facing the opposite direction.

Search for studs or furrings inside the wall and attach brackets to these positions. Alternatively, attach a wooden beam (or anti-turnover rail) firmly to studs and then attach brackets to this beam.

Fix by attaching ratchet belts to the hand grips on the refrigerator’s rear.

Screw in eye bolts with the hook facing upward.
Screw in wire facing the opposite direction.