(For Faculty/Staff)

Earthquake Response Manual

Assembly Point

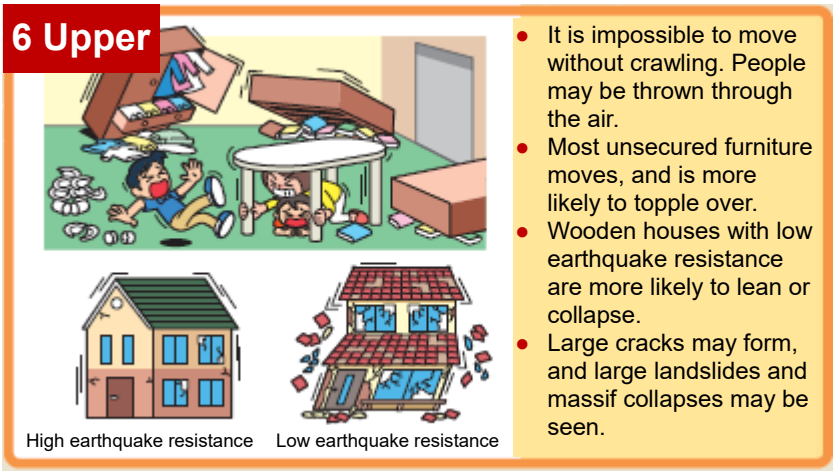
Evacuation Area When Assembly Point is Unsafe

Kyoto University

Earthquake Preparedness

A severe earthquake with a seismic intensity of 6-lower struck the northern part of Osaka in June 2018 (the epicenter was near Takatsuki City), and another with a seismic intensity of 7 struck the central and eastern Iburi regions of Hokkaido in September 2018. Both earthquakes caused severe damage to buildings and other structures, and also caused major problems due to prolonged power outage and traffic disruption over wide areas. Several Kyoto University staff members were injured as a result of the earthquakes.

During the approximately twenty-seven year period since the Great Hanshin Earthquake in 1995, Japan has been struck six times by earthquakes with a seismic intensity of 7, and sixteen times by earthquakes with a seismic intensity of 6-upper. This means that, on average, an earthquake with a seismic intensity of a 6-upper or more has occurred every year somewhere in Japan.



(Excerpted from Japan Meteorological Agency, *Summary of Tables explaining the JMA Seismic Intensity Scale*.)

The Kinki region of Japan is currently considered to be undergoing a seismically active period. This includes the predicted Nankai Trough megathrust earthquake, which, it has been speculated, may be of magnitude 8 or more with a 70% probability of occurring within the next thirty years. Kyoto City's earthquake damage predictions have suggested that an earthquake with a seismic intensity of 7 may occur around the area of Kyoto University's Yoshida and Katsura Campuses.

Kyoto University has been implementing measures to minimize the potential damage caused by earthquakes, including reinforcing the earthquake-resistance of existing buildings. In addition to such measures, it is also important that individuals make their own preparation for the occurrence of earthquakes.

Seismic intensity estimates for each campus

Campus	Intensity	Earthquake with greatest impact
Yoshida	6-upper to 7	Hanaore fault
Uji	6-lower to 6-upper	Ikoma fault, Ujigawa fault Obaku fault, Nankai Trough earthquake
Katsura	7	Katagihara-Mizuo fault

1. Cited from the Kyoto-Uji District Disaster Prevention Plan.
2. Data for other sites and facilities are as per the disaster prevention plans drawn up by the local governments where they are located.

Things to check and rules to follow at the University

- Personal Practice and Student Guidance -

Routinely check the following to enable an appropriate response in the event of an earthquake:

1) Buildings' seismic performance (see "Seismic Performance of Kyoto University Facilities" on the University's website. The information can be accessed from the computer in your office or from outside of the university, and is available in Japanese only).
2) Indoor escape routes in at least two directions (using corridors and stairs)
3) Locations of fire extinguishers, automatic fire alarms (transmitters and receivers), indoor fire hydrants, outdoor fire hydrants, etc. (and their features and methods of use in the case of special-purpose firefighting equipment)
4) Locations of first-aid kits, AEDs, helmets, torches, and other emergency equipment
5) Locations of the nearest medical facilities, including the office of the Environment, Safety, and Health Organization (Kyoto University Infirmary) and the Kyoto University Hospital.
6) Your department's emergency contact tree
7) How to report your safety using the Safety Confirmation System (See p.7)
8) What to do if an earthquake occurs while you are in an elevator, etc.
9) Your department's designated evacuation areas and assembly points in the event of an earthquake

Always follow these rules so that swift action can be taken following an earthquake:

1) Do not block emergency exits, fire doors, or fire shutters.
2) Do not place anything near fire extinguishers, automatic fire alarm equipment, indoor fire hydrants, evacuation equipment, entrances used by the rescue services, etc.
3) Do not move fire extinguishers from their designated locations.
4) Keep escape routes clear by keeping rooms tidy and not blocking passageways, doorways, corridors, emergency exits, etc.
5) Store high-pressure gas cylinders either by firmly chaining them at two points in a cylinder stand that is secured both to the floor and wall, or store them in a cylinder cabinet.

6) Bookcases, lockers, laboratory equipment, and so on should be properly fastened to the floor or wall, or otherwise secured so that they do not move or topple over in an earthquake. Also, do not place heavy objects or objects that pose a risk if they fall anywhere high up.
7) If you use hazardous chemicals, take appropriate steps to make them safe by ensuring that receptacles do not break due to toppling over or colliding in the event of an earthquake. Also, keep chemicals apart so that they do not cause a fire or explosion if their receptacles break and they leak or mix.
8) Do not park vehicles or bicycles anywhere except in designated parking areas.
9) Play an active part in the fire and disaster training and drills organized by disaster prevention officers, department deans/directors, fire prevention officers, and other personnel.

Emergency items that you can carry with you every day: Small flashlight, whistle, portable radio, etc.
Emergency items to keep in your laboratory: Flashlight, running shoes, spare pair of spectacles, medicine, emergency food, gloves, surgical masks, portable radio, mobile phone battery charger, etc.

Make earthquake preparedness habitual, even in the home. Remember that it is up to you to make sure that you are safe and to limit the damage in the event of a major earthquake.

(Please see Ref. 1: Readiness in the Home and Ref. 2: Disaster Message Services)

- Take measures to prevent furniture from toppling over and objects from falling
- Store emergency food, water, and other living necessities
- Prepare an emergency bag
- Discuss with your family and friends in advance the ways that you will confirm each other's safety

In the Event of an Earthquake

- Stay safe and prevent fires -
- If you are in a position of authority, keep calm and give appropriate instructions -
(People in positions of authority should routinely visualize what they would do in an emergency.)

If you feel an earthquake or receive an earthquake early warning

1) **When an earthquake occurs:** If you feel an earthquake or receive an earthquake early warning, immediately stop your lesson or experiment, etc. (See Ref. 3: Earthquake Early Warning).
2) **Ensure safety:** Immediately instruct those around you to take the 1-2-3 safety procedure: Drop, Cover, and Hold On. (See Ref. 4: 1-2-3 safety procedure: Drop, Cover, and Hold On.)

Instructions you might give if in a position of authority

1) **Earthquake! Take cover under a desk!**
2) **Make sure no one is injured!**
3) **Put out all flames (gas and other heat sources)!**

3) **Check to see if anyone is injured:** Once the shaking subsides, call out to one another to check whether anyone has been injured.
4) **Prevent fires:** If you are near any equipment that uses a flame, prevent fires by turning off the gas cock, fuel valve, and power supply when you feel an earthquake or when major shaking has subsided.

If someone is injured or in need of help

1) **Ask for assistance:** If someone needs to be rescued or requires first aid, ask people nearby to assist.
2) **Prioritize assistance efforts appropriately:** In order to undertake rescue work quickly and efficiently during the window while the survival rate is highest, start by rescuing people who are in imminent danger. If many people need to be rescued, give priority to those who can be rescued easiest.
3) **If a fire breaks out:** If a fire breaks out in a location where someone needs to be rescued, rescue work should as a rule wait until the fire is under control.
4) **First aid:** Take any casualties to a safe location, and then make use of the emergency medical supplies kept by each department and the AEDs and other equipment located in buildings to provide life-saving treatment and other necessary first aid.
5) **Take the injured to a medical facility:** If necessary, take the injured to Kyoto University Hospital or the nearest emergency medical facility.

Instructions you might give if in a position of authority

1) **○○-san needs help! Lend a hand!**
2) **I'm taking ○○-san to △△ (a safe location) for medical attention!**
3) **Get emergency medical supplies and AEDs from (where they are normally kept in the department)!**

When evacuating a building and gathering information about the injured and missing people

1) **Decide whether to evacuate the building:** Once major shaking has subsided, choose a safe escape route and calmly proceed outdoors. (Do not panic and rush outside **if you are in an earthquake resistant building**, as there is little risk of it collapsing. However, **if you are in a building that is not highly earthquake resistant**, it may suffer serious damage and you should leave the building as quickly as possible while being careful of aftershocks.)
2) **Be considerate when evacuating:** Please give special consideration and assistance to people in need of help when evacuating, such as persons with disabilities, foreigners, the elderly, infants and young children, pregnant women, and hospital patients.
3) **How to evacuate:** Leave the building by walking down the stairs. (Do not use elevators.)

Instructions you might give if in a position of authority

1) **Use the ○○ stairs to evacuate the building. Do not use any elevator!**
2) **Watch out for falling objects when going outside!**
3) **Proceed to △△ (the department's designated temporary assembly point) after going out of the building!**

4) **Protect yourself while evacuating:** Cover your mouth and nose with a handkerchief to avoid inhaling dust and be cautious of falling objects. If a fire breaks out nearby, keep your body low and cover your mouth and nose with a wet handkerchief to prevent smoke inhalation.
5) **Close doors to prevent fires:** Ensure that all people have evacuated the rooms, and then close the room doors, fire doors, and fire shutters to prevent fires from spreading after evacuation.
6) **Watch out for falling objects:** When exiting a building, watch out for falling objects such as shattered glass and roof tiles (glass can scatter horizontally up to half the distance that it falls).
7) **Evacuate outdoors:** Evacuate to the temporary assembly point designated by your department. If the assembly point is unsafe, evacuate to an evacuation area in accordance with the instructions of university faculty and staff members.
8) **Take a roll call:** Gather information about the injured and missing people and the number of evacuees, and then report the information to the appropriate heads of departments. Depending on the situation, instruct evacuees to cooperate with fire extinguishing and rescue activities and register their safety information on the Safety Confirmation System.

If you are in an elevator: Most of the elevators in university buildings are programmed to automatically stop at the nearest floor in the event of an earthquake with a seismic intensity of 4 or more. If you are in an elevator during an earthquake and the elevator automatically stops, leave the elevator immediately and evacuate the building using the stairs. If the elevator stops between floors, etc., and you are confined in the elevator, use the intercom or another method (banging on the door, etc.) to call for help, and wait for assistance.

In the event of a fire or other emergency

General Guidelines

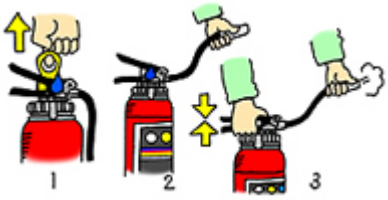
- If you discover a fire or other situation requiring emergency action after an earthquake, inform those nearby in a loud voice and press the fire alarm.
- If the phones work, call 119. If the phones do not work, decide who nearby should go to inform the fire department in person.
  As soon as possible, also contact the department's dean or director and other points of contact specified by the department of the location of the fire and state of damage, etc.

Instructions you might give if in a position of authority

1) **Call 119!**
   (If the phone lines are down: ○○-san, go and tell the fire department!)
2) **Get a fire extinguisher!**
3) **I'm going to put out the fire in △△! (Give priority to escape routes.)**

In the event of a fire

- If you discover or are near the site of a fire, engage in initial firefighting using a fire extinguisher, indoor fire hydrant, outdoor fire hydrant, etc. after first making sure that you are not putting yourself at risk by doing so.
- If fires have broken out in multiple locations, give priority to tackling those that threaten escape routes.
- If a fire spreads and becomes dangerous to tackle, do not put yourself at risk. Instead, check that everyone in the room has been evacuated, close the doors and fire doors (fire shutters), and evacuate.



If dangerous materials or toxic substances are released

- ○ If you discover the release of dangerous materials or toxic substances or other special emergency circumstances, alert people in the vicinity in a loud voice and otherwise follow the procedure for a fire.
- ○ If you are indoors near where dangerous materials or toxic substances have escaped, immediately close the doors and windows, turn off the gas, water, air conditioning, and ventilation, move away from doors, walls and windows, and follow the instructions of a faculty or staff member who has the appropriate expertise.

In the event of an incident involving radioactive materials

- ○ If you discover that a problem involving radioactive materials has occurred or may occur, immediately notify the dean or director and radiation safety officer of the department concerned and follow their instructions.

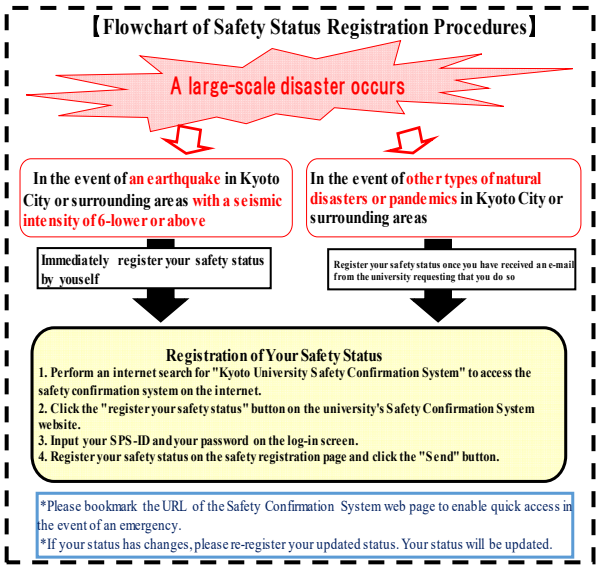
Observe entry restrictions to prevent secondary disasters

If a building or area is judged to be dangerous due to earthquake damage or the escape of dangerous or toxic substances, it will be roped or taped off and signs will be displayed at the entrances and exits to show that entry is prohibited. For your own and others' safety, you must observe these entry restrictions.

Use the Safety Confirmation System to report your safety

In the event of an earthquake with a seismic intensity of 6-lower or greater in Kyoto City or the surrounding areas:*

1) Access the Safety Confirmation System through your smartphone, PC, or tablet to register your safety information.
2) If you cannot register your safety information on the Safety Confirmation System, inform your department of your safety by phone or e-mail.



*Kyoto City and surrounding areas are defined as follows:

Southern Kyoto Prefecture:
Kyoto City, Nantan City, Kameoka City, Muko City, Nagaoka City, Uji City, Joyo City, Yawata City, Kyotanabe City, Kizugawa City, Kyotanba-cho, Oyamazaki-cho, Kumiyama-cho, Ide-cho, Uzitawara-cho, Kasagi-cho, Wazuka-cho, Seika-cho, Minamiyamashiro-mura

Southern Shiga Prefecture:
Otsu City, Kusatsu City, Moriyama City, Ritto City, Yasu City, Omihachiman City, Higashiomi City, Koka City, Konan City, Hino-cho, Ryuo-cho

Northern Osaka Prefecture:
Osaka City, Toyonaka City, Ikeda City, Suita City, Takatsuki City, Ibaraki City, Mino City, Settsu City, Shimamoto-cho, Toyono-cho, Nose-cho, Moriguchi City, Hirakata City, Yao City, Neyagawa City, Daito City, Kashiwara City, Kadoma

City, Higashiosaka city, Shijonawate city, Katano city

If you do not self-report and your safety cannot be confirmed your department will attempt to confirm that you are safe by:

- Telephoning or e-mailing you directly.
- Checking to see if you have left messages on any of the disaster message services (see Ref. 2).
- Posting a notice on the university website, the website of your department, or KUMail (the e-mail system for faculty and staff) requesting that you contact the university.
- Making inquiries with your family or acquaintances.

Traffic restrictions and assistance when returning home

An earthquake or similar major disaster would cause damage to roads and railways and lead to the imposition of traffic restrictions, suspension of public transport services, and road closures. It is therefore likely that many people would find it difficult to return home from school or work, and that congestion and confusion would occur if they all tried to walk home instead. This would not only pose a risk to safety, but also hinder the movement of the emergency firefighting and rescue services and prevent aid from reaching the worst-hit areas.

To avoid unnecessary congestion in an emergency, the University has put in place arrangements for providing information, distributing stocks of food and water, and providing space (temporary accommodation) where staff and students can stay safely until they can return home.

In an emergency, therefore, faculty/staff and students who use public transport services or commute a considerable distance and others likely to face difficulties in returning home should do as instructed by their department and the emergency response headquarters.

(Ref. 1)

Preparedness in the Home

Simple Steps to Take in the Home to Be Prepared for an Earthquake

Reinforce the structure of your home to improve its earthquake-resistance

It is advised that you reinforce the structure of your home to improve its earthquake-resistance. This will minimize the potential damage from earthquakes and protect you, your family, and property. This is particularly important if your house was constructed before 1982, or if it has an unbalanced structure. You are advised to conduct an earthquake resistance check and carry out any necessary renovations.

Take measures to prevent furniture from toppling over and objects from falling.

Many deaths in the Great Hanshin-Awaji Earthquake were caused by falling furniture. You should therefore make sure furniture is property secured so that it does not topple over.

- Fasten furniture and large home appliances to walls to prevent them from toppling over.
- Avoid as far as possible placing large items of furniture in bedrooms and children's rooms. Where unavoidable, make sure that furniture is as low as possible, and arrange it so that it will not block doorways if it falls over.
- Cover any glass in windows and furniture with shatter-proof film.
- Keep torches, slippers, and whistles in accessible locations.

Stockpile food, drink, and other daily necessities.

- Keep at least three days (around one week if possible) of provisions in the home in case essential utilities and the distribution network are disrupted.
- Get into the habit of using your refrigerator and other means to keep a "rolling stock" of slightly more food than you need immediately, and replenish your supplies when you have used up half, in order to stockpile provisions without waste.
- Keep three liters of drinking water per day per person, and save water in the bath to use for non-drinking use (such as toilets).
- Make sure that you have an alternative heat source such as a portable stove (along with spare gas cartridges too).

Rice (uncooked and precooked), biscuits, chocolate bars, boil-in-the-bag foods, canned food, long-lasting fruit and vegetables (onions, potatoes, bananas, apples, oranges), toilet paper, tissue paper, cigarette lighters (matches), candles, portable stove (with spare cartridges), etc.

Prepare an emergency bag

If your home is damaged or destroyed in a disaster, you will need to take refuge in a municipal shelter. To be prepared for such a possibility, it is advisable to prepare a bag packed with emergency supplies. The bag should weigh approximately 15kg for man and 10kg for woman (if the emergency supplies are heavier than this, store the excess at home as secondary supplies to be retrieved as needed).

- **Things to take when you first leave:** essentials for living in an evacuation center (including around three days' worth of food and drink)
- **Things to fetch later:** things to get as needed until relief supplies arrive

Food, drink, and valuables (bankbooks, health insurance cards, seals, cash), emergency and household medical supplies, mobile phone, portable radio, torch, batteries, helmet (or hat or disaster hood), clothes, daily necessities (lighter, work gloves, paper cups, can opener, plastic sheet, bottle opener, wet wipes, etc.), other items (rainwear, warm clothes, and other items according to weather and season)
*If you have a baby, make sure that you also pack infant formula, baby bottles, disposable diapers, etc.

Decide with other members of your family how you will check you are all safe in an emergency.

- Get a disaster map (hazard map) from your local government and decide beforehand where you will all meet up (evacuate to) and which escape routes you will take.
- Decide how you will confirm each other's safety using Disaster Emergency Message Dial and Disaster Message Board services.
  (See Ref. 2: Disaster Message Services)

(Ref. 2)

Disaster Message Services (Confirming the Safety of Family and Friends)

When an earthquake, typhoon, torrential rain, or similar major disaster occurs, the affected areas are inundated with calls and it can be hard to get through. To lessen the impact of blocked lines, telecom providers provide Disaster Message services accessible via landlines, mobile phones, and the Internet to enable people to check that family members and friends are safe and to inform them where they have sought shelter.

Types of disaster message services:

- Disaster Emergency Message Dial (171): Voice message services for safety confirmation. Accessible from telephones.
- Disaster Message Board: Text message service for safety confirmation. Accessible from telephones by using their internet functions.
- Disaster Message Board (web171): Text message service for safety confirmation that uses a telephone number as an access code. Also features a function that allows the user to send messages to pre-registered e-mail addresses and phone numbers.

When the services are available:

- In the event of a disaster, such as an earthquake with a seismic intensity of 6-lower or greater.

Trial versions and opportunities to practice using the services:

- You can practice these services on designated "trial" days: the 1st and 15th of every month, the 1st to 3rd of January, during Disaster Preparedness Week, and Disaster Preparedness and Volunteers' Week.

Disaster Emergency Message Dial (171)

Disaster Emergency Message Dial is a voice message service for safety confirmation. (NTT East and West)
You can record messages of up to 30 seconds long, and can store up to 20 messages.
You can also perform cross-searches with the Disaster Message Board (web171) to find people you are trying to contact.

- **To record a message reporting your safety status:**

Dial 171 + 1# + Your phone number (including the area code) in the disaster area → Record your message → Dial + 9#

1. Dial "171" and follow the recorded instructions.
2. Dial "1#" (If you want to add a PIN number, dial "3" and enter a four-digit PIN number.)
3. Enter your home phone number (or the phone number of a person that you want to contact) in the disaster area.
4. Record your message of up to 30 seconds long.

- **Play back a message by a person that you want to contact:**

Dial 171 + 2# +The person's phone number (including the area code) → Play back the message

1. Dial "171" and follow the recorded instructions.
2. Dial "2#" (If you want to add a PIN number, dial "4" and enter a four-digit PIN number.)
3. Enter your home phone number (or the phone number of a person that you want to contact) in the disaster area.
4. Play back the message recorded by the person that you want to contact.

Disaster Message Board
(Accessible from mobile phones and smartphones in the disaster area)

The Disaster Message Board is a text message service for safety confirmation using the internet function of mobile phones.

You can select a preset description of your current situation and add a comment of up to 100 double-byte characters long. You can store up to 10 messages on the service.

- **Register a message (in the event of a disaster, a link to the "Disaster Message Board" service will be provided on the top page of your phone company's website.)**

1. Access the Disaster Message Board and select the "Register" option.
2. Select a preset description of your current situation, and enter a comment.
3. Press the "Register" button to complete the process.

- **Check registered messages**

1. Access the Disaster Message Board service and select the "Confirm" option.
   *You can also confirm messages on your computer, etc.

NTT Docomo:	http://dengon.docomo.ne.jp/top.cgi
KDDI (au):	http://dengon.ezweb.ne.jp/
SoftBank/ Y!mobile:	http://dengon.softbank.ne.jp/

2. Enter the mobile phone number of the person whose status you want to confirm, and press the "Search" button.
3. Select the message you want to check from the list of messages.

Disaster Emergency Message Board (web 171)
(Accessible from PCs, smartphones, and mobile phones)

The Disaster Emergency Message Board (Web 171) is a text message service for safety confirmation that uses a telephone number as an access code. (NTT East and West)

You can select a preset description of your current situation and add a comment of up to 100 double-byte characters long. You can store up to 10 messages on the service.

A function that enables the user to send messages (artificial voice messages) to pre-registered e-mail addresses and telephone numbers is also available. You can also perform cross-searches with the Disaster Message Board (web171) to find people you are trying to contact.

- **Register or confirm messages**

1. Access the URL: https://www.web171.jp/
2. Enter the phone number for which you want to register or confirm messages, and click the “Post” or “Read” button.
3. Post: Select a preset description of your current situation, add a comment, and click the “Post” button.
   Read: After reading another person’s message, you can post a message to them in reply. The procedure is the same as for registering your own message.

*You can also send messages by pre-registering e-mail addresses (up to 10 addresses) and one phone number.

*You can search for messages across the services provided by different mobile phone companies.

Combined Search of All Safety Confirmation Messages

It is possible to perform a single combined search of all of the safety confirmation messages that are posted on the various disaster message boards of different companies and organizations using the name and telephone number of the person whose safety status you wish to confirm as the search terms.

- NTT Resonant’s J-anpi: http://anpi.jp/top
- Google Person Finder: https://www.google.org/personfinder/japan

(Ref. 3)

Earthquake Early Warning

When an earthquake with a seismic intensity of 5-lower or greater has been predicted, the Earthquake Early Warning System sends advance notifications to all mobile phones (including smartphones) in the areas in which the tremors are expected to occur. The notifications include the expected time of occurrence and estimated seismic intensity of all anticipated tremors with a seismic intensity of 4 or more.

If you receive an earthquake early warning notification, remain calm and take appropriate measures to secure your personal safety.

* As soon as an earthquake occurs, this system detects the earthquake (P-wave, preliminary tremors) near the hypocenter, automatically calculates the location, scale, and expected intensity of shaking, and sends out a warning seconds or more before the onset of strong shaking (S-wave, principal motion) caused by the earthquake. In locations near the hypocenter, however, a warning may not arrive before the onset of strong shaking.

(Ref. 4)

The 1-2-3 Safety Procedure: Drop, Cover, and Hold On

"Drop, Cover and Hold On" describes an effective safety action that can save lives in the event of an earthquake. The three-step procedure is recommended by the Japan Shakeout Network.

In the event of an earthquake, you may only have a few seconds to protect yourself from falling objects. To ensure that you can quickly take the appropriate action to protect yourself in an emergency, it is important to conduct drills to become familiar with the safety procedures, so that they can be performed automatically.

- In the event of an earthquake while you are indoors:
  Immediately perform the 1-2-3 Safety Procedure: "Drop, Cover, and Hold On."
  1. DROP to the ground and stay low (to avoid being falling over due to strong tremors.)
  2. Take COVER under a sturdy desk or table nearby to protect your head. If no shelter is available nearby, cover your head with your arms or a bag.
  3. HOLD ON until the tremors stop.

- In the event of an earthquake while you are outdoors:
  Immediately find a safe place away from buildings, trees, utility poles, and electric wires, and perform the 1-2-3 Safety Procedure: "Drop, Cover, and Hold On."
  Stay in the safe area until the tremors stop.

- In the event of an earthquake while you are driving a vehicle:
  Pull the vehicle over in a safe open place, wear the seat-belt, and stay in the safe area until the tremors stop.