

# Nuclear Disaster Management Guide



# Introduction

- This pamphlet was created as a guide for residents in the event of an accident at the Tohoku Electric Power Company’s Onagawa Nuclear Power Plant, or when otherwise confronted with a nuclear disaster.
- Please acquaint yourself with the information and keep this guide in a convenient place.

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Sendai and Miyagi’s tourism promotion character  
Musubimaru

# 1

## What is a nuclear disaster?

➔ A disaster that occurs when radioactive materials are released from a nuclear power plant

### What happens when there is an accident at a nuclear power plant?

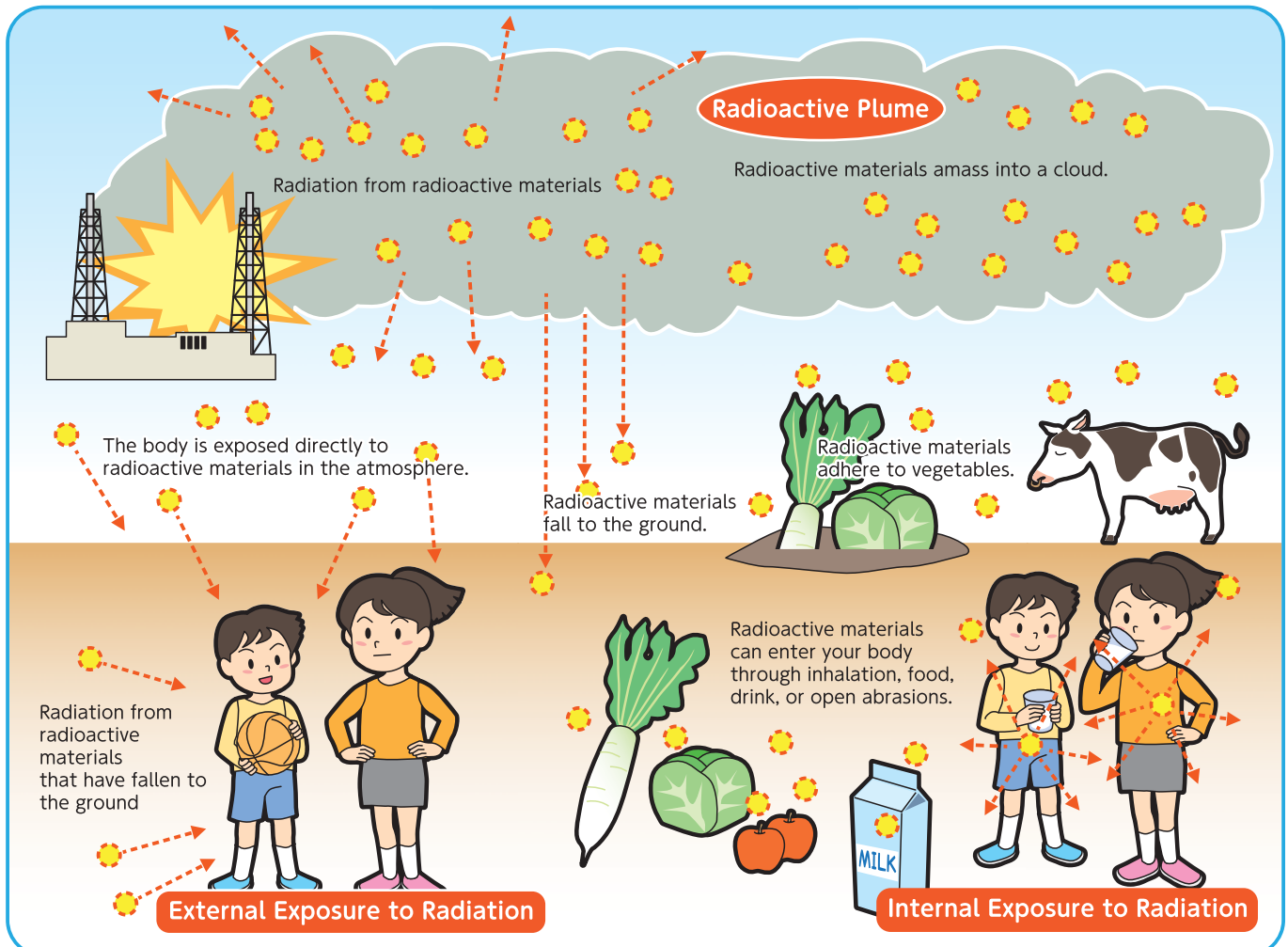
- Radioactive materials could be released, which would lead to the risk of radiation exposure.
- Radioactive materials amass like a cloud (radioactive plume) and **spread downwind**.
- Radiation exposure can occur by direct contact of radioactive materials with the body (external exposure) or by inhaling or ingesting radioactive materials (internal exposure).
- To reduce internal exposure, restrictions may be placed on the consumption of food and beverages produced in the affected area.
- Depending on the state of the nuclear power plant, it may be necessary to evacuate or take refuge indoors.

### What are the characteristics of a nuclear disaster?

- Radioactive materials are invisible and have no scent. They are imperceptible by the five senses. Therefore, nuclear disasters are different from storms, floods, and fires in that it is difficult to determine how people are affected and what action they should take.
- When dealing with a nuclear disaster, it is important to remain calm and act according to accurate information given by the national, prefectural, and municipal governments.

### Illustration of the occurrence of a disaster

\*Radioactive materials and radiation are invisible.



# 2

## Which areas need to be prepared?

➔ Areas within an approximate 5 km radius (PAZ) and 30 km radius (UPZ) of a nuclear power plant

### What are “PAZ” and “UPZ”?

- Areas that must concentrate on taking nuclear disaster countermeasures that were established based on Tokyo Electric Power Company’s Fukushima Nuclear Power Plant Accident.

### PAZ: Areas that must prepare precautionary protection measures (Precautionary Action Zone)

- Areas that must evacuate as a precaution in accordance with the state of the nuclear power plant
- Applies to areas within an approximate 5 km radius of the nuclear power plant

#### Areas designated as PAZ

Onagawa Town	Takashirohama, Yokoura, Oishihara, Nonohama, Iigohama, Tsukahama, Koyadori, Kirigasaki, Takenoura, Izushima, Terama
Ishinomaki City	Oginohama, Kozumihama, Samenoura, Maeami, Yoriiso, Oyagawa, Yagawa, Tomari

### UPZ: Areas that must prepare emergency protection measures (Urgent Protective action planning Zone)

- Areas where residents must take refuge indoors in accordance with the state of the nuclear power plant, and evacuate or temporarily relocate in accordance with the results of air radiation measurements.
- Applies to areas within an approximate 30 km radius of the nuclear power plant

#### Areas designated as UPZ

Onagawa Town	All areas not included in PAZ
Ishinomaki City	All areas not included in PAZ
Tome City	All areas of Tsuyama-cho, all areas of Toyosato-cho
Higashi-matsushima City	Kamimachiichi, Kamimachini, Kamimachisan, Kitakukansha, Ekimae, Kawado, Shitanbashiri, Nishishinmachi, Kamikawadoichi, Kamikawadoni, Kamikawadosan, Kamikawadoyon, Wakaba, Shimomachiichi, Shimomachini, Shimomachisan, Shimomachiyon, Shimomachigo, Odame, Higashiodame, Sekinouchiichi, Sekinouchini, Sekinouchisan, Sakutaura, Shimoura, Minamiurakansha, Aoi, Tatenuma, Kazumaichi, Kazumani, Dochi, Nitambashiri, Kamikomatsu, Sawada, Maesato, Temaneki, Maeyanagi, Shimokomatsu, Yachi, Komatsuminami, Komatsudai, Gomikura, Jono, Yokonumahigashi, Yokonumanishi, Yokonumaichi, Yokonumani, Kaigarazukaichi, Kaigarazukani, Kaida, Doba, Takada, Kamihamaichi, Kamihamani, Kamihamasan, Shimohamaichi, Shimohamani, Terui, Oshita, Nakato, Tera, Muyari, Yahata, Ura, Yokozeki, Minamiichi, Minamini, Minamisan, Shinkawamae, Minamiyon, Minamigo, Minamiroku, Minamimidori, Minamishinichi, Minamishinni, Yanagikita, Yanagishimo, Yanaginishi, Shioiri, Omote, Naka, Oshima, Uraichi, Urani, Onokami, Onoshimo, Neko, Takamatsu, Okankami, Okanshimo, Hiraoka, Kyuhamaichi, Nakashimo, Shinmachi, Kameokahigashi, Kameokaminami, Ohama, Murohama
Wakuya Town	Oyachi, Tandai
Misato Town	Koshima
Minamisanriku Town	Aramachikami, Aramachishimo, Saidokami, Saidoshimo, Oritatekami, Oritateshimo, Mitobe, Zaigokami, Zaigoshimo, Hadenyakami, Hadenyashimo, Tsunomiya, Takihama, Fujihama, Nagashizu, Terahama, Hayashi, Okubo

\*Evacuation areas may also be designated independently by municipal governments.

## PAZ

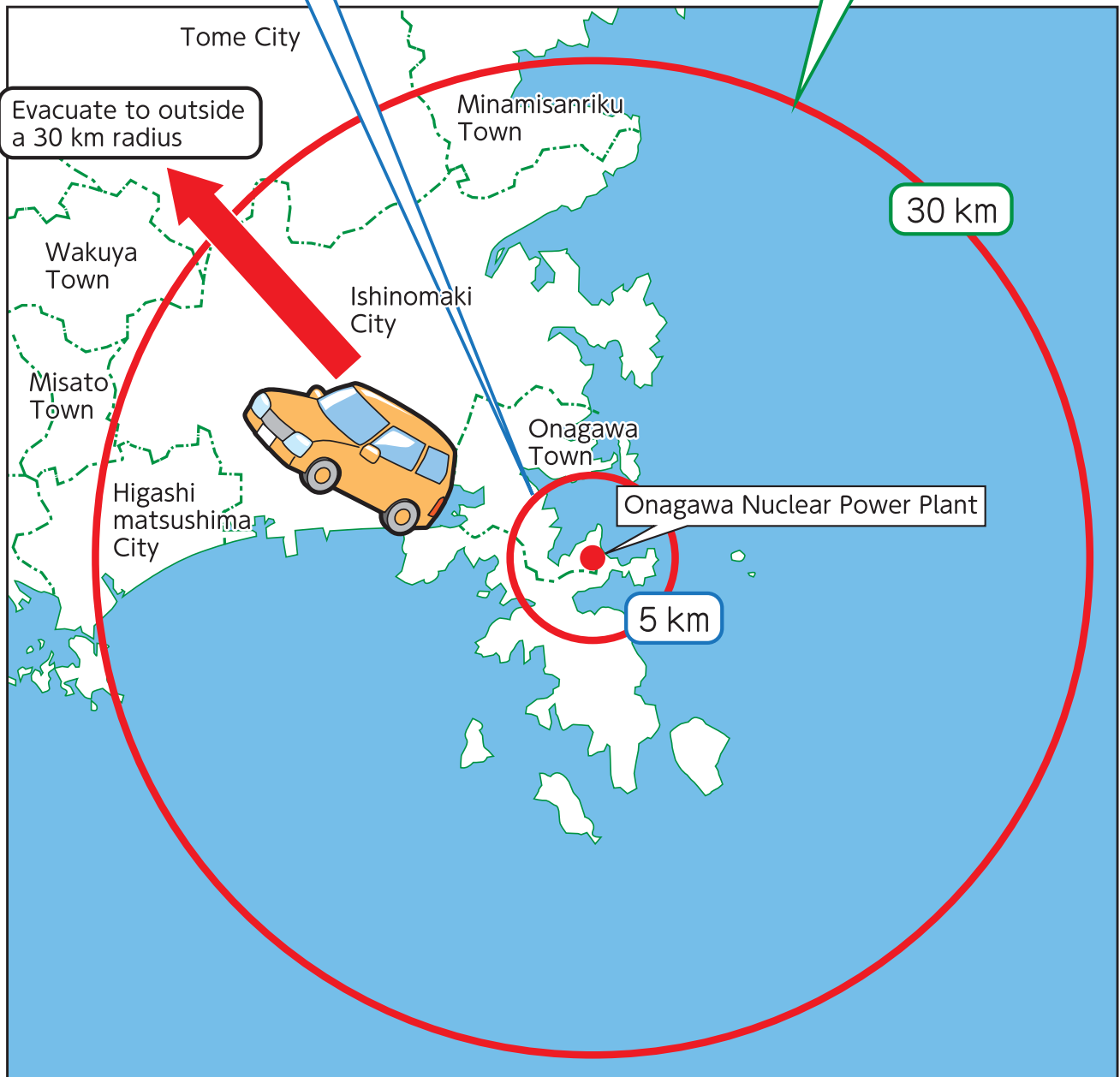
Within an approximate 5 km radius of a nuclear power plant

## UPZ

Within an approximate 30 km radius of a nuclear power plant

- **Evacuate** in accordance with the conditions at the nuclear power plant

- **Take refuge indoors** in accordance with the conditions at the nuclear power plant
- **Evacuate or relocate temporarily** in accordance with the results of air radiation level measurements



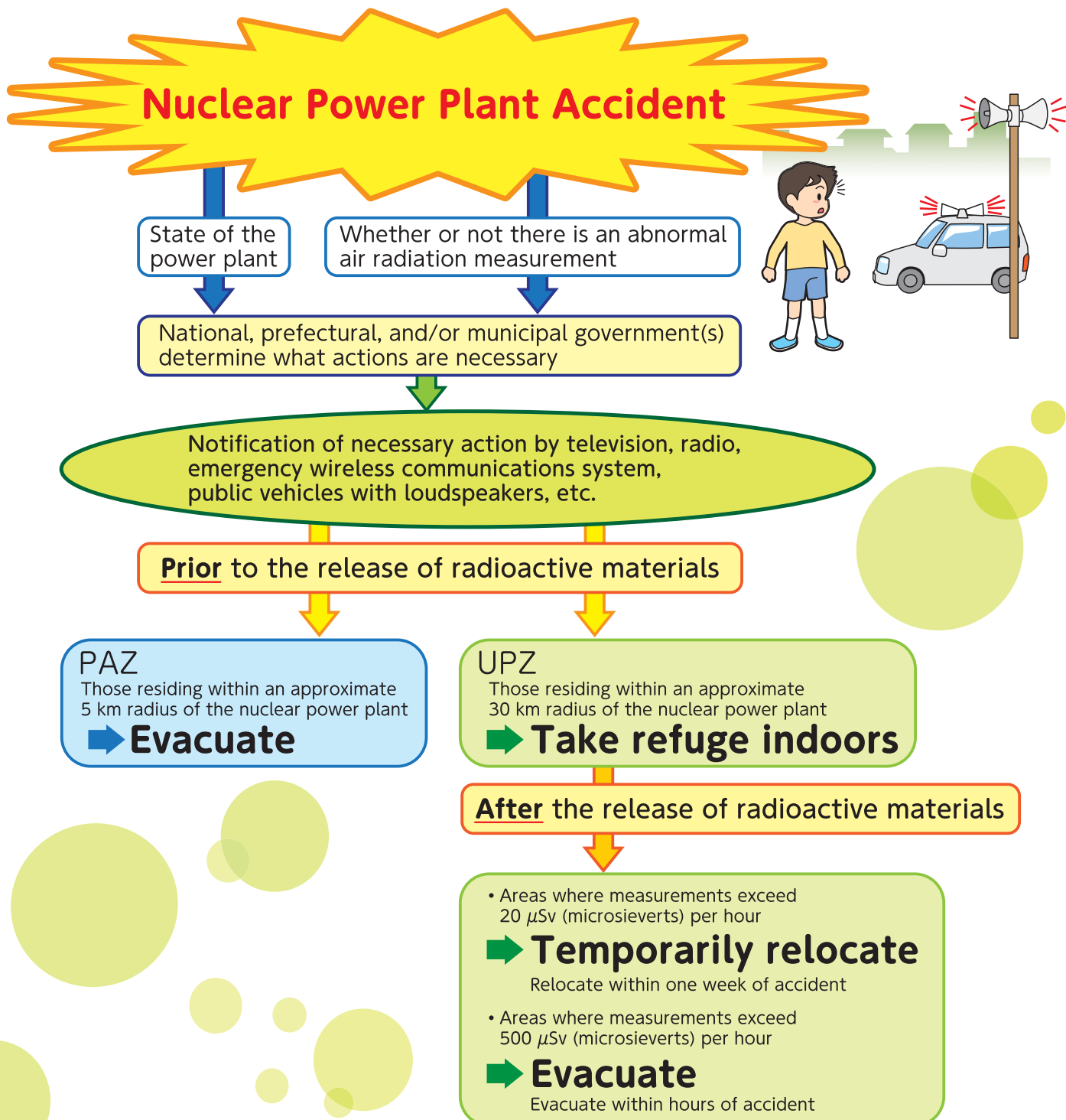
# 3

## What should I do if there is an accident at a nuclear power plant?

➔ Evacuate or take refuge indoors in accordance with instructions from your municipal government

### What actions should I take? -From the occurrence of an accident to evacuation-

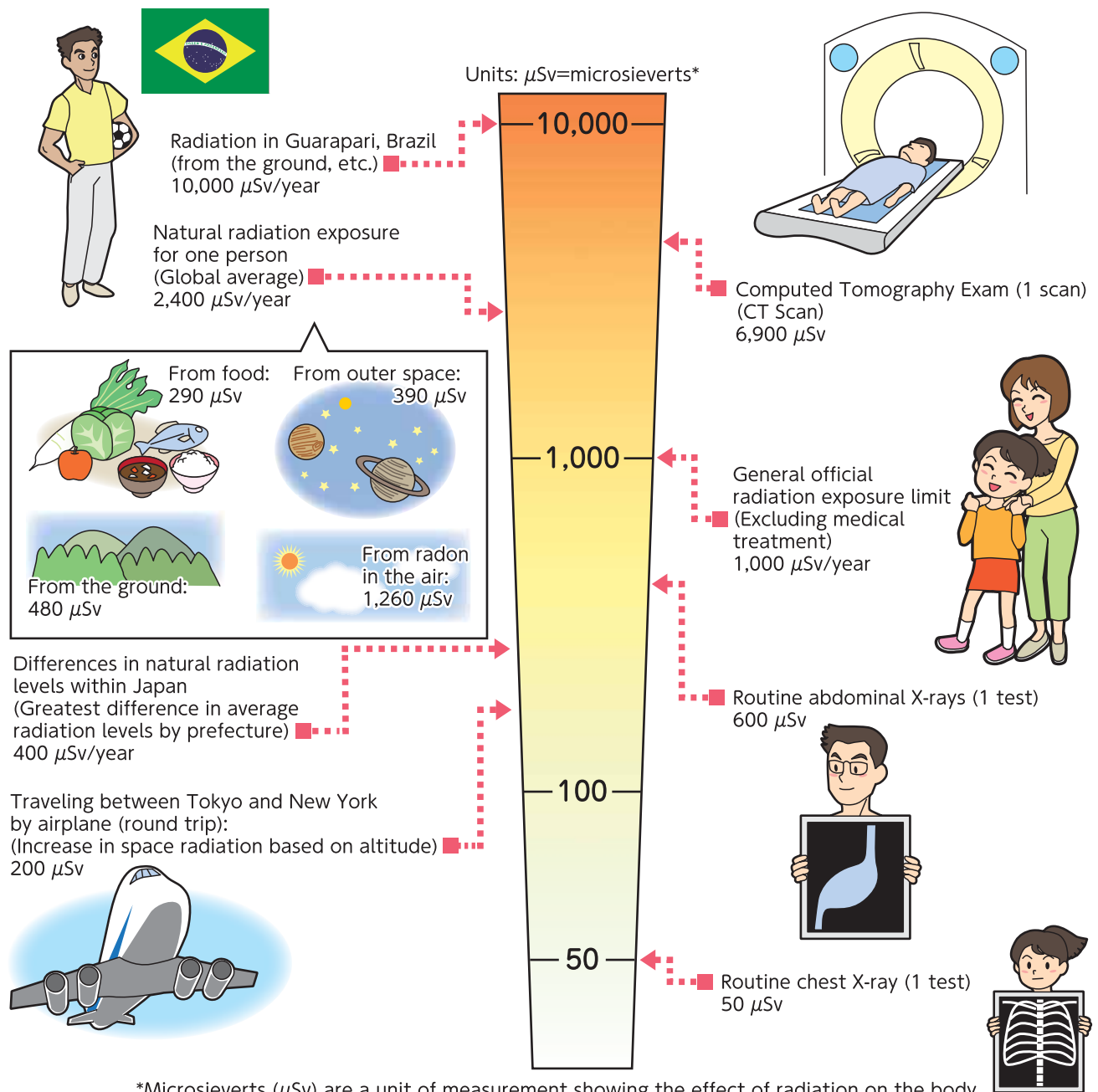
- If the national, prefectural, and/or municipal government determine(s) that evacuating or taking refuge indoors is necessary, announcements will be made to residents.
- The occurrence of an accident at a nuclear power plant does not necessarily indicate that radioactive materials will be released, thus there may be situations in which evacuating or taking refuge indoors is not necessary. **It is important to act according to the instructions and correct information issued by government agencies.**



## Column: Radiation in Daily Life

Radioactive materials which emit radiation have been in existence since before human beings, and we are exposed to radiation all around us every day in the ground, the air, and in our food. Radiation is also used for medical treatment. In these ways, radiation exposure is part of our daily lives.

Radiation damages our cells, but the body can repair the damage. The global average for natural radiation exposure for one person is 2,400 microsieverts per year.



\*Microsieverts ( $\mu\text{Sv}$ ) are a unit of measurement showing the effect of radiation on the body.  
1 sievert = 1,000 millisieverts = 1,000,000 microsieverts

(Based on the Ministry of Education, Culture, Sports, Science and Technology's "Radiation in Daily Life")

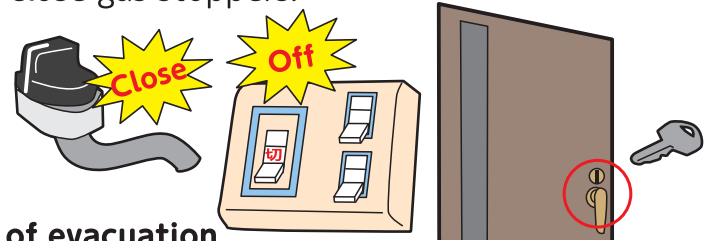
# 4

## What should I do when instructed to evacuate or temporarily relocate?

- ➔ Proceed to an evacuation shelter by way of an evacuation screening checkpoint or evacuation shelter reception station.

### What should I do before evacuating?

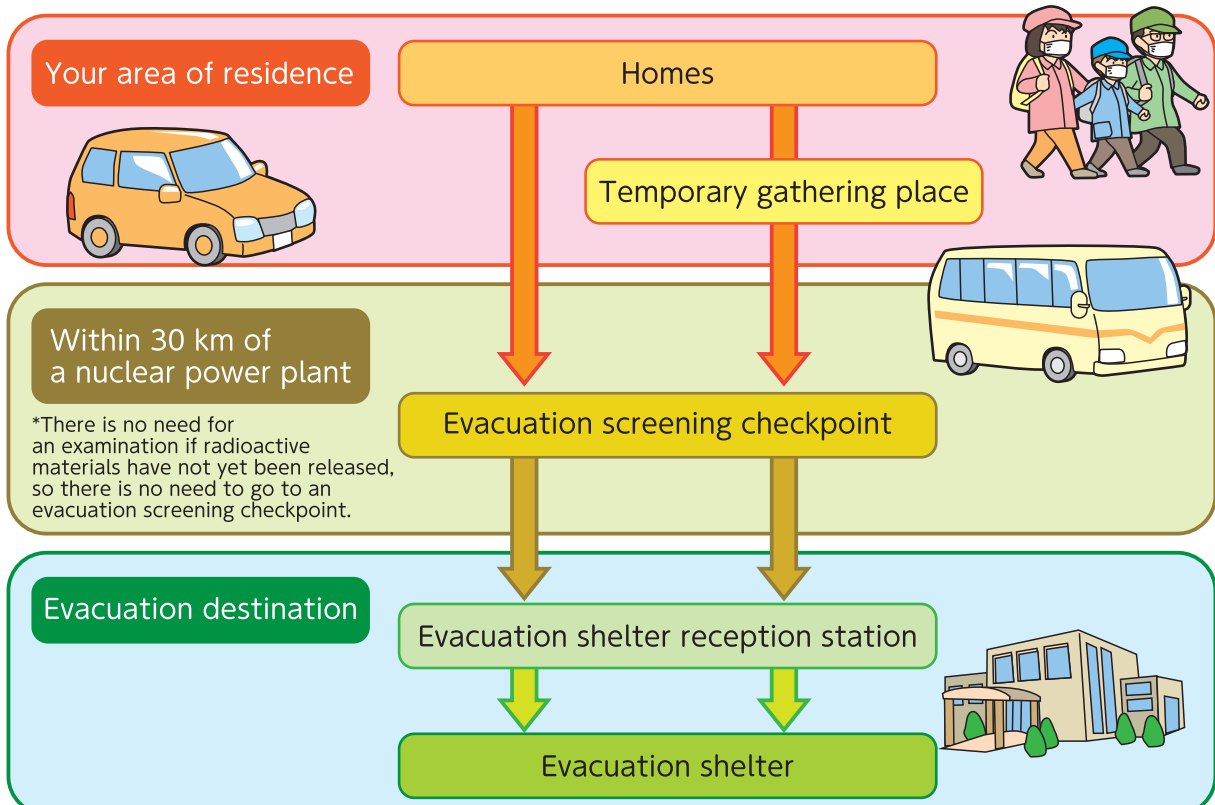
- If evacuation or temporary relocation instructions are issued, confirm the instructions and act on them calmly.
- Make sure to turn off electric breakers and close gas stoppers.
- Don't forget to close and lock your windows and doors.



### How should I evacuate?

- Personal vehicles are the standard means of evacuation. It may not be possible to refuel during a disaster, so you should always make sure your car has at least enough fuel to evacuate.
- When you cannot evacuate by car, proceed to the nearest temporary gathering place and evacuate by bus, ship, helicopter, etc. (municipal governments designate temporary gathering places for all areas).
- When evacuating after the release of radioactive materials, evacuate by way of an evacuation screening checkpoint to examine for radioactive materials on you and your clothing.
- When you arrive in the city, town, or village to which you are evacuating, proceed to the evacuation reception station for directions to your evacuation shelter, then make your way there.

### When instructions to evacuate or temporarily relocate are issued:





# 5

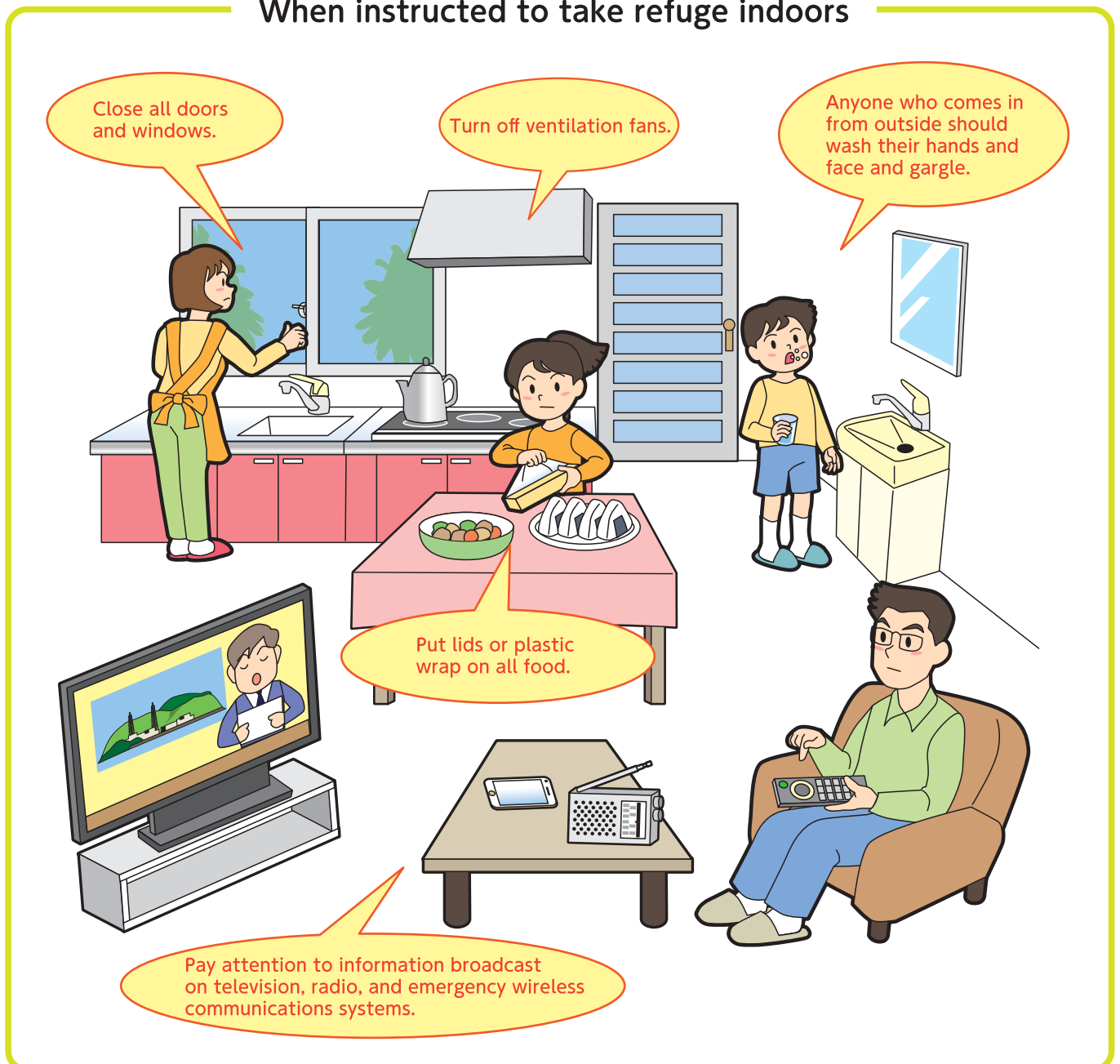
## What should I do when instructed to take refuge indoors?

➔ Go inside your residence or a public facility building.

### How can I take refuge effectively?

- By closing doors and windows, you can prevent radioactive materials from entering and minimize exposure to radiation.
- When radioactive materials pass over the area, you can minimize radiation exposure better by taking refuge indoors than by going outside to evacuate.

### When instructed to take refuge indoors



# 6

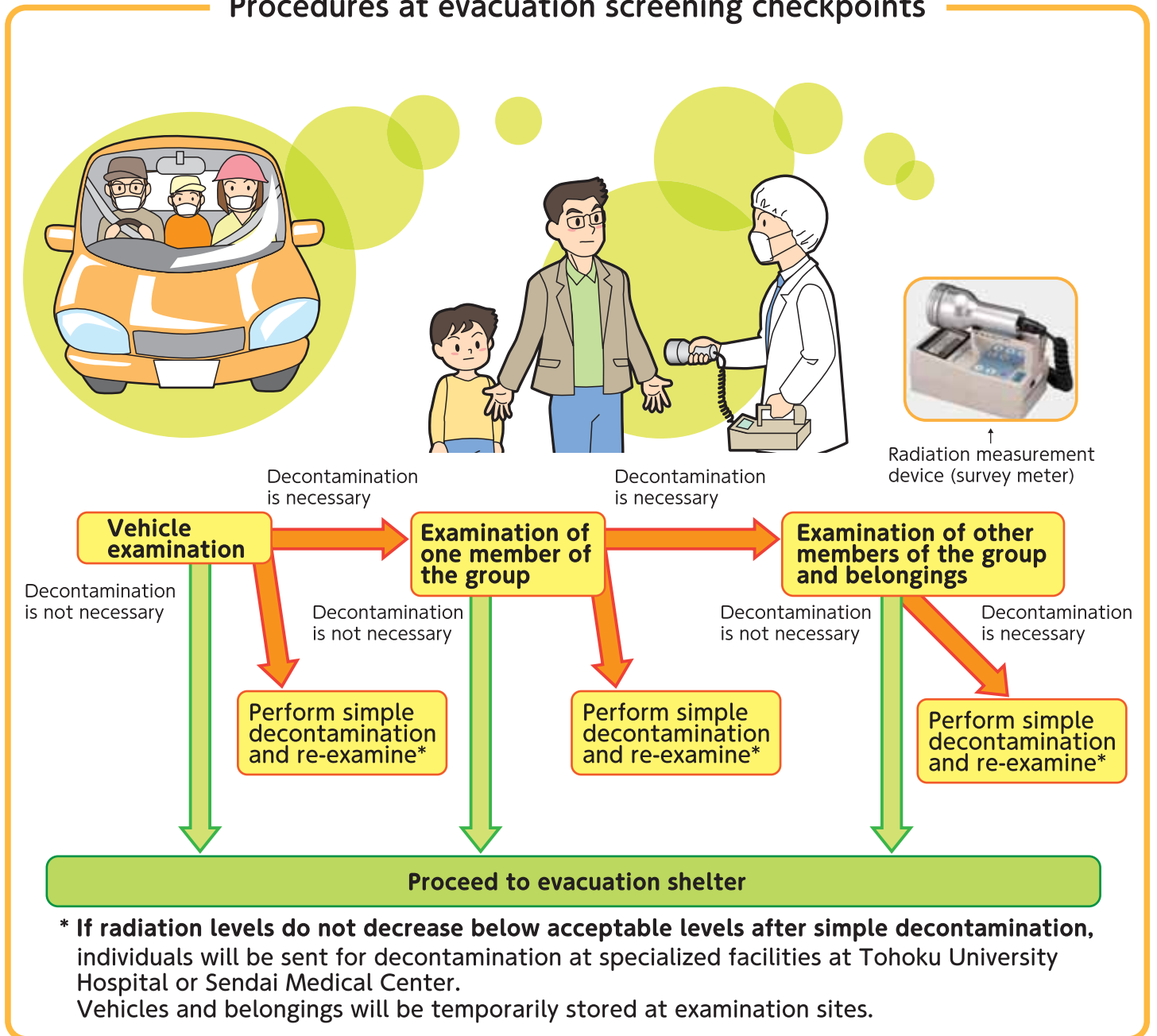
## What happens at an evacuation screening checkpoint?

➔ Vehicles and clothing will be checked for radioactive materials.

### How are checks carried out?

- Evacuation screening checkpoints will be set up on evacuation routes that lead to evacuation shelters.
- Examinations will be carried out at evacuation screening checkpoints to look for radioactive materials on vehicles and clothing.
- If the examination results show more radiation than acceptable levels, decontamination will be carried out.

### Procedures at evacuation screening checkpoints



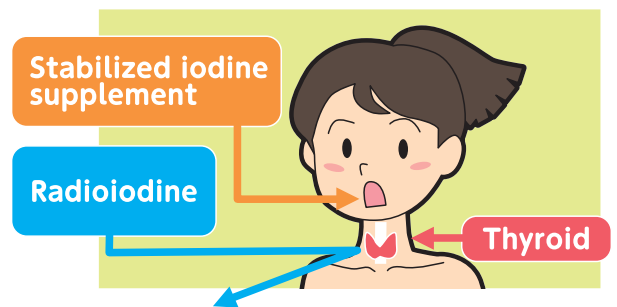
# 7

## What is a stabilized iodine supplement?

- ➔ It is a medical supplement that minimizes the thyroid's exposure to radiation from radioiodine. Taking the supplement may be necessary when evacuating or taking temporary refuge.

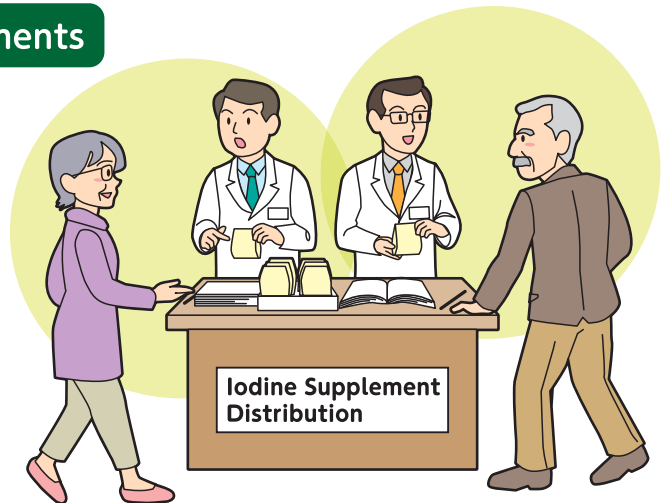
### Why take a stabilized iodine supplement?

- In the case of a nuclear accident, radiation-emitting radioiodine may be released.
- Iodine is easily absorbed by the thyroid.
- When large amounts of radioiodine are taken in through ingestion or inhalation, it accumulates in the thyroid and causes internal exposure.
- Prior to exposure, with a dosage of non-radioactive iodine, stable iodine is stored in the thyroid, making radioiodine difficult to absorb, thus preventing and minimizing radiation exposure to the thyroid.



### Distribution of stabilized iodine supplements

- For those living in the PAZ:  
They will be distributed in advance at information sessions conducted by doctors.
- For those living in the UPZ:  
When taking stabilized iodine becomes necessary, supplements will be distributed in accordance with evacuation and temporary relocation procedures.



### About stabilized iodine supplement use

- The national, prefectural, and/or municipal government(s) will issue instructions on stabilized iodine supplement use.
- There may be side effects and/or adverse reactions, **so take the supplement according to the directions.**
- A single dose for adults and children 13 or older is 2 tablets. Children 3 or over but under 13 should take 1 tablet. Children under 3 will receive the supplement in liquid form.
- Do not exceed the dosage guidelines.  
(Taking a larger dose does not increase effectiveness.)
- In general, take only one dose.
- After taking the supplement, continue with evacuating or taking refuge indoors.



↑ Stabilized iodine supplement

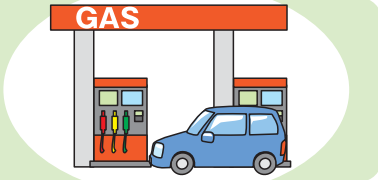
Preparation is the same as for a natural disaster, so make a habit of being ready.

## Checklist of items to take with you

<input checked="" type="checkbox"/> <b>Valuables</b>  Cash, personal seal, insurance card or proof, etc.	<input checked="" type="checkbox"/> <b>Food</b>  Drinking water and emergency rations	<input checked="" type="checkbox"/> <b>Emergency medication</b>  Household medicine, adhesive bandages, etc.	<input checked="" type="checkbox"/> <b>Clothing, etc.</b>  Clean clothes, towels, sanitary products, etc.	<input checked="" type="checkbox"/> <b>Infant and child products</b>  Disposable diapers, powdered milk, baby bottle, etc.
<input checked="" type="checkbox"/> <b>Handheld radio, flashlight</b>  Don't forget batteries!	<input checked="" type="checkbox"/> <b>Mobile phone</b>  Don't forget chargers!	<input checked="" type="checkbox"/> <b>Daily necessities</b>  Glasses, dentures, hearing aids, etc.	<input checked="" type="checkbox"/> <b>Things you will need during evacuation</b>  Masks, handkerchief, outerwear, bag or backpack, hat, slippers, etc.	

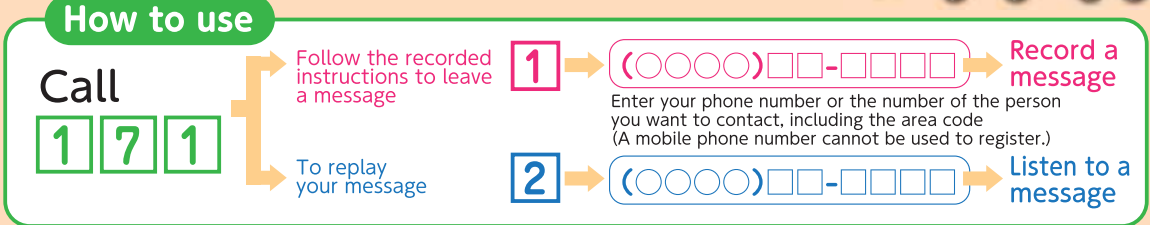
## Have enough fuel in your car

In the event that a vehicle is necessary for evacuation or temporary relocation, you may not know when you can refuel again. By always keeping a full tank, you can be sure to have enough to evacuate in an emergency.



Placing a phone call becomes difficult during a disaster.

**Please use Disaster Emergency Message Dial 171.**



\*Various communications companies provide services to leave messages in times of disaster. Check with your provider.

## Publication/Editing/Inquiries

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[http://www.r-info-miyagi.jp/m/\(mobile site\)](http://www.r-info-miyagi.jp/m/(mobile site))