

# INSTRUCTIONS

## IN CASE OF A RADIATION HAZARD

It is highly unlikely, yet possible, that all of the Olkiluoto nuclear power plant's safety systems should fail at the same time. Should this happen, it could result in a radiation hazard.

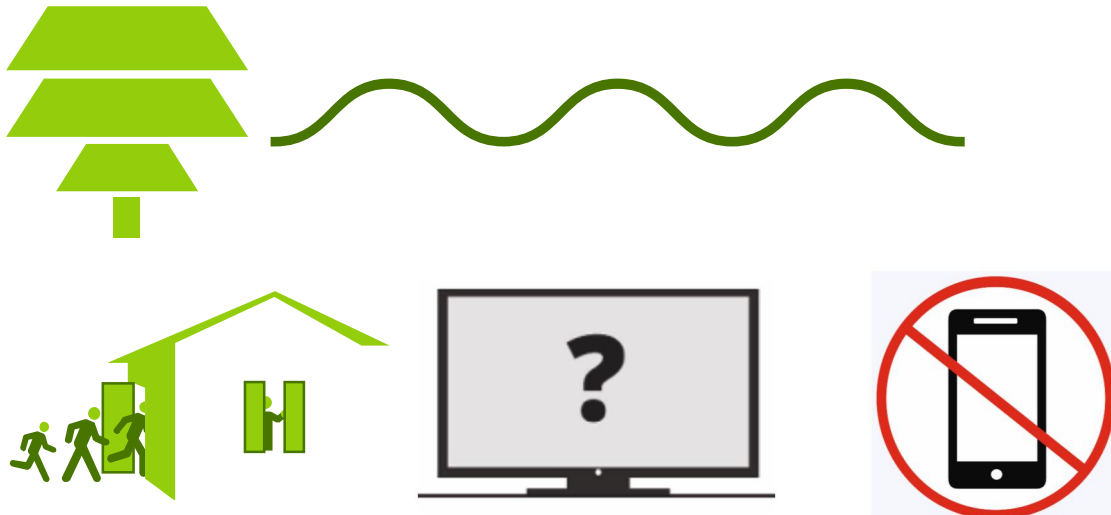
In the event of a potential accident, it is important that you follow the instructions given on the radio and television. The instructions are also available on the YLE teletext pages 112 and 867–868. Follow the instructions issued by the authorities.

In the event of a radiation hazard, the authorities will issue to the population instructions regarding seeking shelter indoors, taking iodine tablets and evacuation, for example. Do not take iodine tablets or leave the area unless you are ordered to do so by the authorities. The goal is to prevent immediate health hazards and to limit the effects of radiation as much as possible.

In accordance with the Ministry of the Interior's decree on communication in case of a radiation hazard (774/2011), these instructions are updated and distributed to the residents of the area surrounding the nuclear power plant every three years.

### **If you hear the general hazard signal**

The general hazard signal lasts for 60 seconds with an alternating seven-second rising and falling pitch.



1. Go indoors and stay there.
2. Shut all doors, windows and ventilation openings and turn off mechanical ventilation.

3. Open the television or radio. Calmly wait for instructions.

4. Avoid using the telephone to keep the lines open.
5. Do not leave the area unless you are ordered to do so by the authorities: it might be hazardous.

The "all clear" signal is a 60-second continuous even sound used to indicate that the threat or hazard is over.



### Radioactivity and radiation

There are small concentrations of radioactive substances in our daily living environment: the soil, construction materials, water, air and our bodies. The radiation caused by these and the background radiation from space is called natural background radiation.

Some of the radiation dose people receive is caused by the practical application of radiation, such as the medical use of radiation.

### The health effects of radiation

Exposure to ionising radiation of radioactive substances increases the risk of health hazards. The risk of cancer is small even after exposure to a large radiation dose. A potential cancerous tumour only appears several years after the exposure, and a specific tumour cannot usually be connected to any specific event of exposure. Only people who have been exposed to large radiation doses within a short period of time may soon after the

exposure show symptoms caused by radiation, such as nausea and diarrhoea.

The health hazards of radiation can be roughly estimated on the basis of the radiation dose. The radiation dose is usually given in millisieverts [mSv].

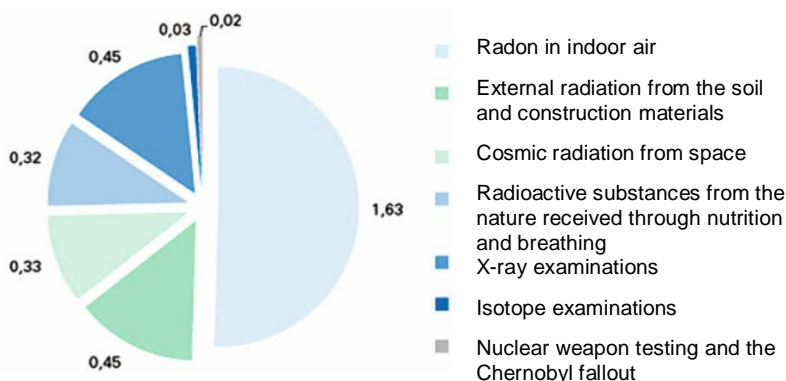
All unnecessary radiation must be avoided. The higher the radiation dose you receive, the higher is the likelihood of health hazards.

### Radiation hazard

The normal operations of the Olkiluoto nuclear power plant are not hazardous to people or the environment.

A radiation hazard may occur during a nuclear power plant accident where radioactive substances are released to the air or seawater in an uncontrolled manner. In this case, people may be exposed to radiation through radioactive substances that have landed in the environment or have entered the body through contaminated air or food.

The average annual radiation dose of Finns is 3.2 mSv.



### Examples of radiation doses

| Magnitude of the dose |   |
|-----------------------|---|
| 0.01 mSv              | Dose to the patient in a dental x-ray examination   |
| 2.8 mSv               | Annual dose of cosmic radiation to airplane staff   |
| 3.2 mSv               | Average annual radiation dose of Finns (radon in indoor air, X-ray examinations etc.)       |
| 20 mSv                | The highest allowed annual dose to radiation workers  |
| 1,000 mSv (1 Sv)      | Daily dose which causes symptoms of acute radiation sickness (including fatigue and nausea) |



### **The authorities run the operations in hazardous situations**

The safety of the nuclear power plant and the radiation situation of the surrounding environment are being continuously monitored.

In the event of a radiation hazard, the rescue authorities shall communicate the hazard and issue the public instructions regarding seeking shelter indoors, taking iodine tablets and evacuation.

The authorities will also give instructions on the protection of agricultural production and animal feed to ensure that animal products are not contaminated.

The goal of the protective measures is to prevent immediate health hazards and to limit the effects of radiation as much as possible.

### **Seek shelter indoors**

Residential buildings provide good shelter in case of a radiation hazard. Try to seal the premises as well as possible. Shut all doors, windows and ventilation openings and turn off mechanical ventilation. This will reduce the amount of radioactive particles and gases penetrating the building. Protect all foodstuff by placing them in dust-proof plastic bags or containers. Tap water will remain uncontaminated. The refrigerator, freezer and tight packaging provide protection against radioactive dust.

The walls, roofs and intermediate floors of buildings absorb radiation, so the best protection is available in the centre section of the building or in the basement. Avoid rooms that have large windows.

You will be asked to seek shelter indoors for a maximum of two days. Even when buildings are sealed, some radioactive substances may penetrate them. Once the radioactive cloud has passed, act according to instructions issued by the authorities.

If it is absolutely necessary for you to go outdoors, wear a respirator and clothes that cover your skin as much as possible and are easy to clean, such as rainwear. When you return indoors, leave the outdoor clothing in the hallway and wash yourself carefully. This will help prevent radioactive substances from reaching your skin and indoor premises.

All farm animals are moved indoors and given uncontaminated feed to minimise the risk of contamination of animal products, such as milk. Reserve a couple of days' supply of animal feed. Protect feed reserves against fallout.

### **Iodine tablets**

In the event of a nuclear power plant accident, radioactive iodine may be released into the outdoor air. Protection against radioactive iodine can be obtained by taking iodine tablets, which prevent the accumulation of radioactive iodine in the thyroid. Iodine tablets do not protect against other radioactive substances.

Do not take iodine tablets without being instructed to do so by the authorities. If you take the tablets too soon or too late, their effect is reduced.

Iodine tablets can be purchased at the pharmacy. It is a good idea to keep them in stock just in case.

Do not go outdoors to get iodine tablets if the general hazard signal has been sounded or the authorities have otherwise instructed you to stay indoors. By seeking shelter indoors, you will significantly reduce the amount of iodine you receive through breathing. Taking iodine tablets is particularly important for children and pregnant women, as the thyroids of children and fetuses are more sensitive to radiation than those of adults.

### **Open the radio or television**

Follow the instructions given on the radio and television. The instructions are also available on the YLE teletext pages 112 and 867–868.

### **Do not use the telephone**

Avoid using the telephone during a radiation hazard. Any extra load on the telephone lines may block all calls, which may hinder rescue operations.

### **Evacuation**

If the authorities estimate that seeking shelter indoors is not a sufficient protective measure, the population is ordered to temporarily evacuate the hazardous area. Take with you only the necessary equipment. Turn off the ventilation. Otherwise, leave your home the way you would if you were leaving for a long holiday. If you are on a farm, move the cattle indoors and follow the instructions issued by the authorities.

Evacuation will take place before the radioactive cloud reaches the area, provided that there is enough time. If not, evacuation will only occur once the cloud has passed the area. If the cloud reaches your area, seek shelter indoors.

The authorities will issue more detailed instructions on evacuation on the radio and television. During an evacuation, most of the population will vacate the hazardous area in private vehicles.

Transportation arrangements, safe direction, destination and possible assembly locations are decided according to the situation. When necessary, the rescue operation management shall organise bus transportation.



*Precautionary action zone* is an area extending approximately five kilometres from the nuclear power plant (indicated on the map with a dashed line) and subject to limitations of land use.

*Emergency planning zone* is an area extending approximately 20 kilometres from the nuclear power plant (indicated on the map with a bold line) for which the authorities must, according to the Rescue Act, prepare an external rescue plan for the event of a radiation accident.

### Emergency response and rescue operations

Under the leadership of the rescue authorities, governmental and municipal authorities, units and departments participate in the planning of rescue operations and take action in accident and hazardous situations to ensure efficient rescue operations.

In the event of a radiation hazard, the necessary protective measures are carried out by, among others, the rescue services, police, food authorities, social and health services, coastguard, Ministry of the Interior, agricultural authorities, Radiation and Nuclear Safety Authority and the Finnish Broadcasting Company YLE. When necessary, assistance can also be requested from the Finnish Defence Forces. The authorities may also order other parties, such as transportation and accommodation companies, to participate in the rescue operations.

The rescue services have prepared a specific external rescue plan for the event of a radiation accident and TVO has prepared its own emergency response plan for the event of a radiation accident at the Olkiluoto nuclear power plant. The authorities and other operators involved in the rescue operations practice the operations in accordance with the rescue plan and maintain a constant emergency response readiness.

### These instructions are distributed to the residents of the emergency planning zone

According to a Government decision and decree by the Ministry of the Interior, the nuclear power plant, the rescue services and the Radiation and Nuclear Safety Authority must in co-operation, at three-year intervals, deliver to the residents of the area surrounding the nuclear power plant instructions on how to operate in the event of a radiation hazard.

The instructions are distributed to all households and workplaces in Eurajoki and Rauma. The instructions are also published on the websites of TVO, the municipality of Eurajoki and the city of Rauma. The owners of holiday homes in the area are sent the instructions to their permanent address. They are requested to ensure that up-to-date instructions are available at their holiday homes.

### Additional information:

Satakunta Rescue Services, [www.satapelastus.fi](http://www.satapelastus.fi)

Teollisuuden Voima Oyj, Olkiluoto power plant, [www.tvo.fi](http://www.tvo.fi)

