

## How can radiation harm people:

Generally, there are 4 major pathways how humans can be exposed to the radiation in the environment:

- Cloudshine or external exposure to a cloud of radioactivity.
- Groundshine or external exposure to radioactivity deposited on the ground.
- Inhalation of airborne radionuclides.
- Ingestion of contaminated food or water.

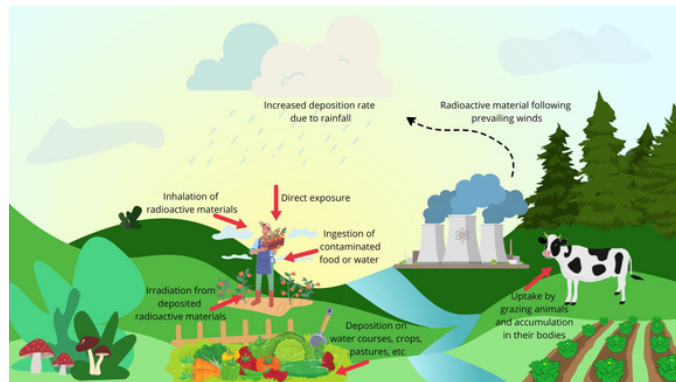


FIGURE 2: Contamination pathways

## What is important for protection:

The discharge of radioactive materials can affect human health and the environment. In particular, it can increase the risk of developing cancer.

## The impact on health depends on:

- Type, intensity, distance and duration of radiation.
- Exposure time and exposure pathway.
- Protective measures (sheltering, taking iodine tablets, avoiding contaminated food and feed, evacuation and possible resettlement).
- Children and pregnant women have higher health risks!

## To reduce radiation exposure:

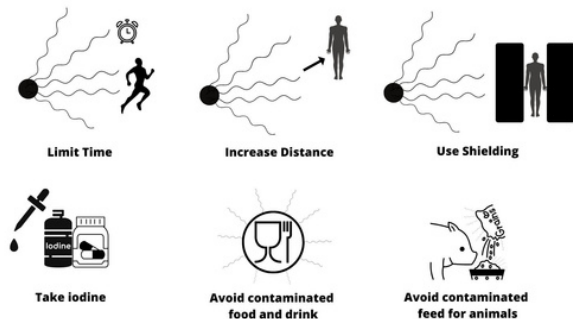


FIGURE 3: Protective actions

## Further information for Slovenia

Be aware that countries have different intervention levels for starting protective measures as well as different zoning.

HERCA is the voluntary association of the Heads of Radiation Protection Authorities giving advice on radiation protection including Emergency Preparedness & Response, find your country Fact Sheet here: [https://www.herca.org/documents/?filter\\_wg%5B%5D=30&update\\_year=](https://www.herca.org/documents/?filter_wg%5B%5D=30&update_year=)

## •General information on EP&R:

<https://www.gov.si teme/jedrske-in-radioloske-nesrece/>

## •Guides for population:

[https://www.gov.si/assets/organi-v-sestavu/URSJV/Dokumenti/NUID/Plakati/O\\_sevanju\\_v\\_primeru\\_nesrece.pdf](https://www.gov.si/assets/organi-v-sestavu/URSJV/Dokumenti/NUID/Plakati/O_sevanju_v_primeru_nesrece.pdf)

## •Protective measures in case of nuclear accident:

<https://www.gov.si teme/jedrske-in-radioloske-nesrece/zascitni-ukrepi-ob-jedrski-ali-radioloski-nesreci/>

- shelter the population,
- iodine ingestion,
- evacuation,
- measures to protect food, water and feed.

## •Contacts:

Uprava RS za zaščito in reševanje  
Ministrstvo za obrambo  
Vojkova cesta 61  
1000 Ljubljana  
01 471 33 22  
[urszr@urszr.si](mailto:urszr@urszr.si)

Uprava RS za jedrsko varnost  
Ministrstvo za okolje in prostor  
Litostrojska 54  
1000 Ljubljana  
01 472 11 00  
[gp.ursjv@gov.si](mailto:gp.ursjv@gov.si)



## What to do in case of a nuclear emergency and how to prepare ?

*Nuclear Transparency Watch is a European network that promotes a citizen watch on nuclear safety and transparency.*

*The network was launched in 2013 after a call of Members of the European Parliament from different political origins.*

*Nuclear Transparency Watch looks at all activities of the nuclear cycle, including: outsourcing, policies for plant life-time extension, emergency preparedness and liability issues, costs of nuclear safety and radioactive waste management.*

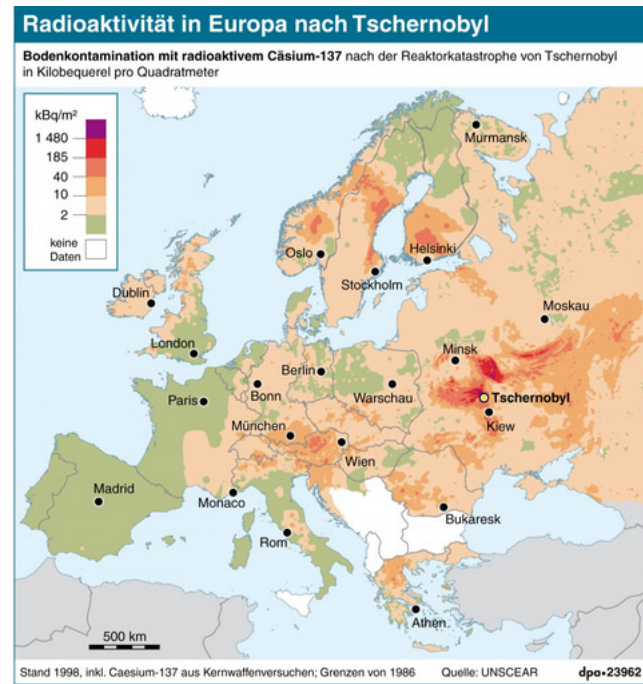
[nucleartransparencywatch@gmail.com](mailto:nucleartransparencywatch@gmail.com)

[www.nuclear-transparency-watch.eu](http://www.nuclear-transparency-watch.eu)

## Nuclear accident in nuclear power plants can happen even if the likelihood of occurrence is low:

•**Chernobyl** NPP accident in 1986, former Soviet Union: due to violation of technical specifications a reactor core meltdown occurred followed by explosions which damaged the whole building. Radioactive contamination spread over whole Europe; more than 115,000 people were evacuated, a 30km exclusion zone was established.

•**Fukushima** NPP accident in 2011, Japan: due to earthquake and tsunami causing damage to the nuclear power plant systems (loss of power) combined with design deficiencies (the emergency power supplies were flooded), three nuclear meltdowns, three hydrogen explosions, and the release of radioactive material and radiation occurred. In addition, one spent fuel pool was damaged. Radioactive contamination endangered population and the Pacific ocean, a 30 km emergency evacuation zone was established which was extended up to 45 km to the North-West a month later. Both accidents were rated 7 on the International Nuclear Event Scale (INES), which is the most severe level.



**FIGURE 1: MAP (Caesium-map of contamination after Chernobyl)**

Radiation impacts can arise from accidents in all types of nuclear facilities. They can also result from malicious intent of terrorist groups or abuses in an armed conflict.

## What to do in case of a nuclear emergency and how to prepare?

### Inform yourself

- Find out about facilities which pose risk in your area and inform yourself what is planned in case of an emergency.
- Inform yourself on alert systems like siren signals and what to do if you hear them.

### Sheltering

- When recommended stay indoors, preferably in firm buildings. Close all windows, doors and shut down ventilation and use adhesive tape to seal windows, doors and ventilation slots to prevent inhalation of radioactive substances.
- Do not go outside if possible. But if you have to, wear a mask, protective glasses and protective clothing to protect you from radioactive dust and rain. After getting back indoors, carefully dispose of the contaminated outer layer of clothing and take a shower or wipe your body with wet clothes that you also dispose of afterwards.



**FIGURE 4: What to wear outside**

- Get in contact with your neighbours and help each other.
  - If there is enough time, close your greenhouse, put your cattle in the stable, harvest vegetables.
  - Listen to the television or radio station for updates and further instructions, use different sources of information that you trust.
  - It might be safer for children to stay at school or day care during the time of the passage of the radioactive cloud, if they are sheltered and safe there.
- Get prepared for sheltering:
- Store food, water, hygiene products, medicine, fodder for animals etc. for two weeks.
  - Get a radio with batteries to be independent of electricity in case of a blackout.
  - Prepare together with your family, friends and neighbours and help others to prepare.
  - Talk to your school/day care if they have prepared for such a situation and if your children would be safe to stay there during the passage of a radioactive cloud.

### Iodine tablets

Potassium iodine tablets saturate the thyroid gland with non-radioactive iodine and therefore block the absorption of radioactive iodine when incorporated.

#### •Take iodine tablets only when recommend by the authorities.

- The dosage depends on age because people under 18 years have a higher risk of developing radiation-induced thyroid cancer than adults.
- One tablet contains 65 mg potassium iodine (= 50 mg iodine).
  - Pregnant and lactating women: 2 tablets (only one dose)
  - Children up to 1 month: a quarter tablet (only one dose)
  - Children 1 - 36 months: a half tablet
  - Children 3 up to 12 years: 1 tablet
  - Adolescents and Adults from 12 to about 40/45 years: 2 tablets
  - Adults over about 40/45 years: not recommended (except emergency personnel)
- The protection is higher if iodine tablets are taken within the 6 hours preceding the exposure to the radioactive cloud.
- In some countries you can buy iodine tablets in pharmacies, in some countries you will get them only in case of emergency: **find out if and where you can get iodine tablets** and how to apply them safely.
- Find out if the kindergarden/school is storing iodine tablets. Store them also at home if they are available for you.

### Evacuation

- Look in advance for the evacuation routes and relocation centres in your neighbourhood.
- Establish meeting points with your family and friends in case you get parted during evacuation.
- In the vicinity of the damaged plant, prepare for evacuation (pack important papers, medicine, clothes, toiletries...).
- In case of ordered evacuation, follow the instruction of authorities.
- If you think to evacuate on your own initiative, be aware that exposure outside will be higher and more dangerous than inside.

### Additional protective measures

- In case of a nuclear accident, try to keep calm and avoid panic actions, so as not to harm yourself and others. Follow the instructions of this leaflet and those of the authorities.
- After an accident in your region avoid eating regionally produced food that has not been tested; try to use only food that is contaminated well below the thresholds.