WHAT TO DO
IN THE EVENT OF A NUCLEAR ALERT?

LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG

Keep this brochure in a safe place.

Stay informed through the media and refer to the website www.infocrise.lu.

Follow the instructions of the authorities closely.

Stay calm.

Publisher

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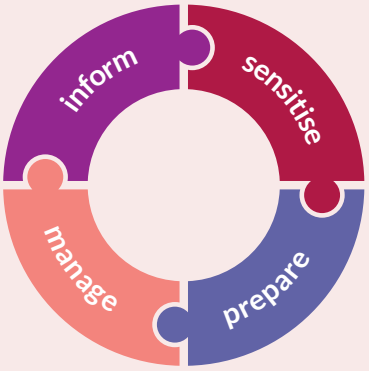
INTRODUCTION

The Grand Duchy of Luxembourg has no nuclear installation on its territory. However, given the proximity of the Cattenom power plant, the Luxembourg government attaches great importance to the protection of the population in the event of a severe accident at the nuclear power plant at Cattenom.

In 2014, the Luxembourg government adopted a new emergency response plan, which defines the action to be taken by the Luxembourg authorities in such an event.

The objective of this brochure is to outline the alert procedures and protective measures provided for in this plan as well as to inform the population about the conduct to adopt in the event of an accident at Cattenom.

The management of such a crisis involves the entire population. Awareness of the action and conduct to adopt as well as of the protective measures taken by the authorities will make the crisis easier to manage. The objective of this brochure and of **www.infocrise.lu**, the official government website for crisis communication, is to inform, sensitise and prepare the population for such an eventuality.

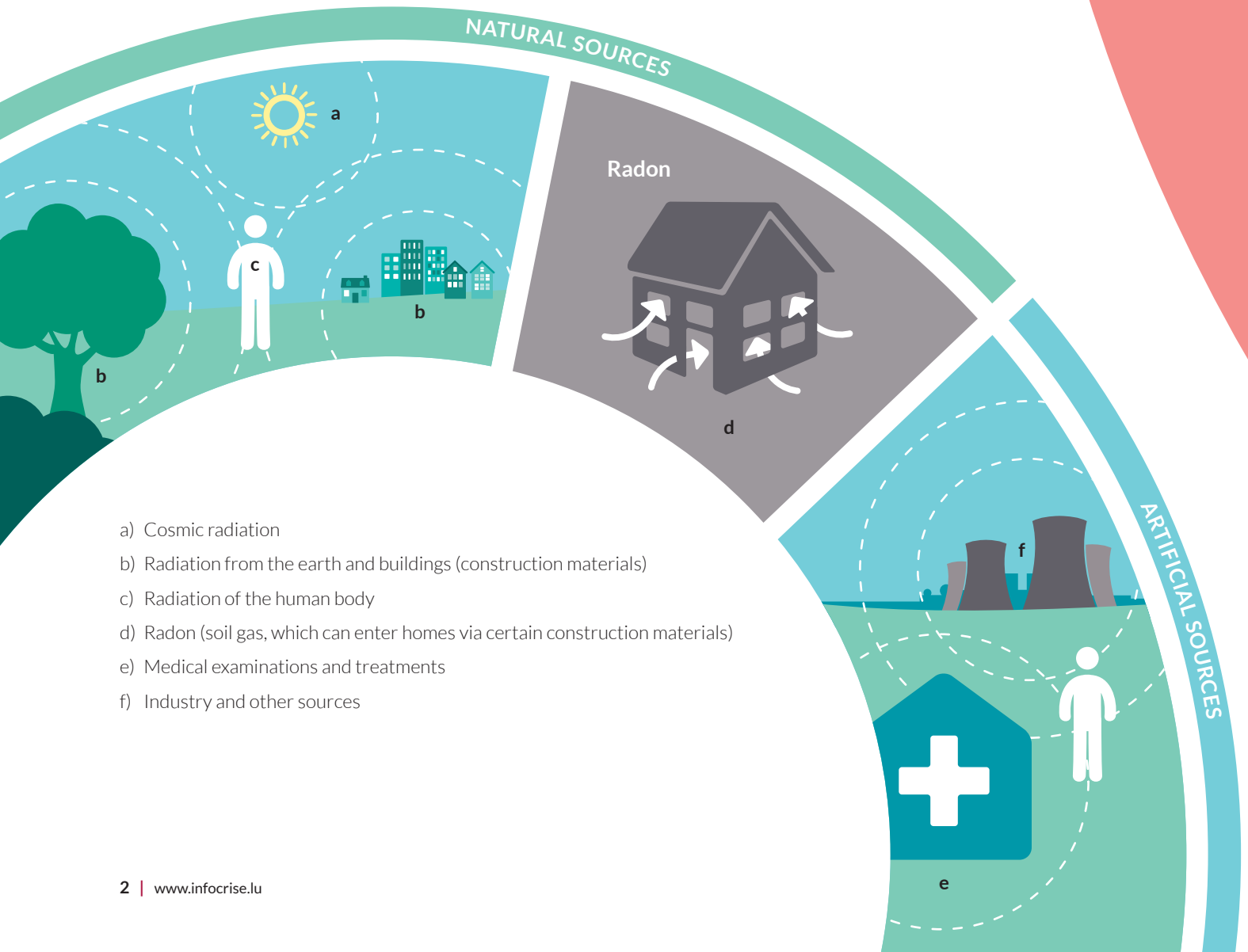


We encourage you to read and keep this brochure, and to refer to the website **www.infocrise.lu** for further details on this subject.

WHAT IS RADIOACTIVITY?

Radioactivity is a natural phenomenon that is present in our environment. Certain natural substances emit ionising radiation; they are said to be radioactive. Radon is the leading source of natural radiation exposure. It is a naturally occurring radioactive gas found in soil.

Two thirds of the radioactivity that the population is exposed to comes from natural sources. The rest comes from artificial sources, primarily medical and industrial.



a) Cosmic radiation
b) Radiation from the earth and buildings (construction materials)
c) Radiation of the human body
d) Radon (soil gas, which can enter homes via certain construction materials)
e) Medical examinations and treatments
f) Industry and other sources

What can happen in the event of a severe accident at a nuclear power plant?

In a nuclear power plant, various accident scenarios can occur, with varying time sequences and radiological hazards.

In a nuclear reactor, radioactive substances are contained by a series of barriers and different security systems. A simultaneous failure of the barriers and the systems can result in a severe accident, with radioactive substances escaping and being dispersed into the environment by the wind.

In the event of a radioactive release into the environment, the ambient air is the first to be contaminated. A radioactive cloud forms. The magnitude of the consequences of a nuclear accident depends primarily on the quantity of radioactivity released into the environment and the meteorological conditions (e.g. the direction and speed of the wind). The release can be deposited on the ground in two ways: dry deposition and wet deposition, i.e. rain. Radioactive deposition is higher in the event of rain.

Radioactivity is

COLOURLESS, ODOURLESS AND INVISIBLE,

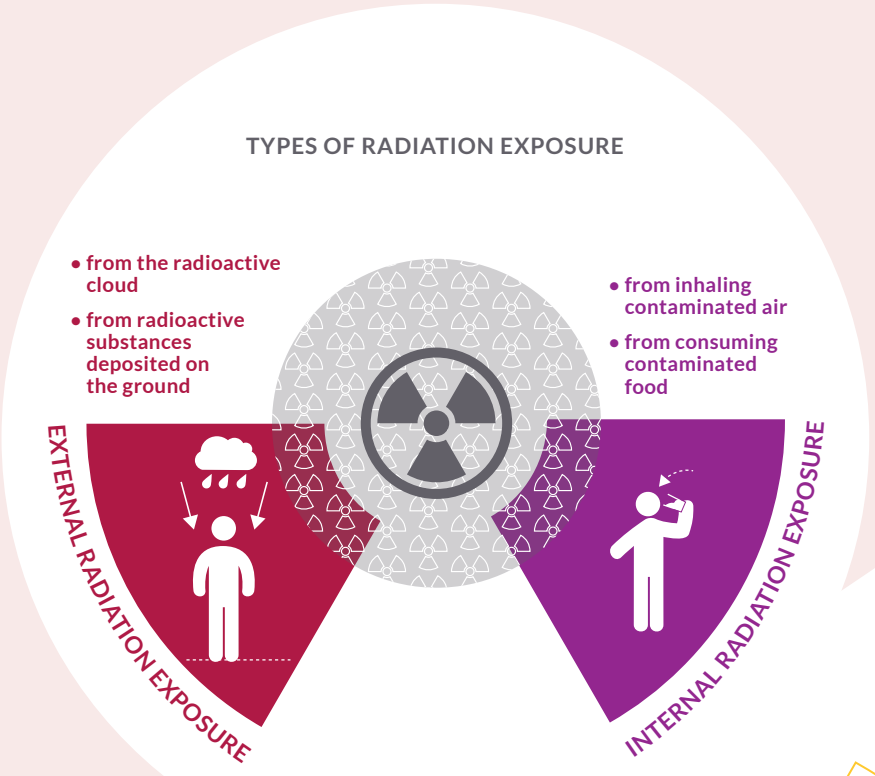
yet detectable with measuring devices.

What are the consequences of a dispersion of radioactive substances?

In the event of a dispersion of radioactive substances, human beings and animals are exposed:

a) to external radiation:
   - from the radioactive cloud during its passage;
   - from the radioactive substances deposited on the ground or the skin;

b) to internal radiation:
   - from inhaling contaminated air;
   - from consuming contaminated food.



DID YOU KNOW?

Radiation effects diminish with an increasing distance from the radiation source, protective screening against radiation (taking shelter) and, if applicable, a reduction in the duration of exposure to radiation.

How does radioactivity work?

Our body is subjected on a daily basis to invisible radioactivity, emitted by both the earth and the universe. This radiation is generally harmless because of the low dose involved.

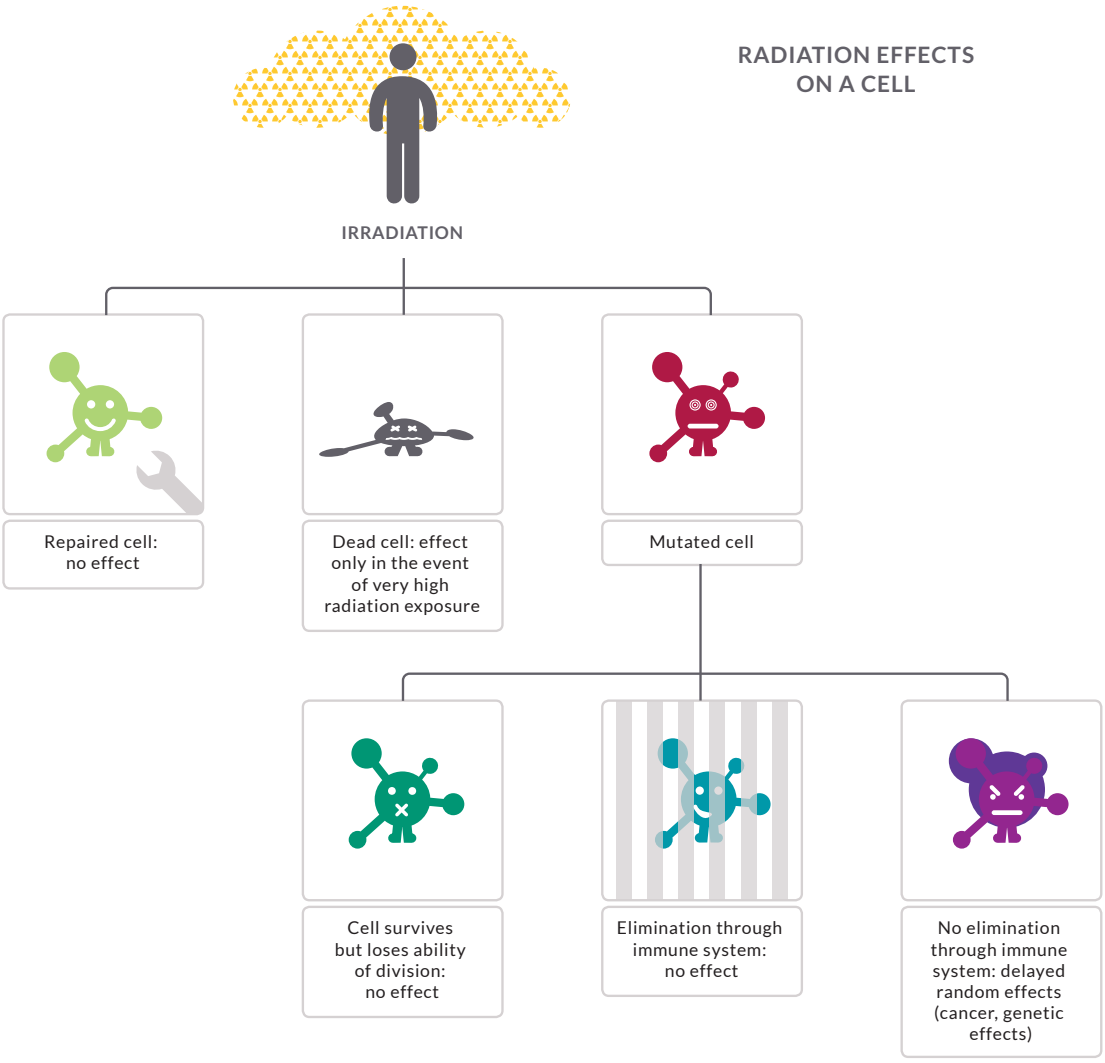
When the dose is higher, particularly in the event of a nuclear accident, radiation can modify and destroy human body cells. If a large number of cells are affected, this poses a risk to human health.

Effects of radiation:

- In the event of very high radiation exposure, the effects manifest at the latest a few days following the exposure. The consequence is serious, even incurable, bodily harm.
- In the event of lower radiation exposure, the effects may manifest many years later. Lower radiation exposure can have an impact on the frequency of cancerous diseases and be the cause of congenital malformations.

The protective measures adopted in the event of an emergency – taking shelter, intake of potassium iodide tablets, evacuation, food restrictions – aim to reduce the effects of radiation.

Given the distance that separates us from the Cattenom power plant, very high radiation exposure is highly unlikely in Luxembourg.



PROTECTIVE MEASURES
FORESEEN BY THE AUTHORITIES

In the event of a severe nuclear accident, the concerns of the authorities will focus primarily on the protection of the population against any exposure, or even contamination, as a result of radioactive release.

To this effect, the government's emergency response plan foresees 4 main preventive and protective measures:

- taking shelter;
- intake of potassium iodide tablets;
- evacuation of the population;
- food restrictions.

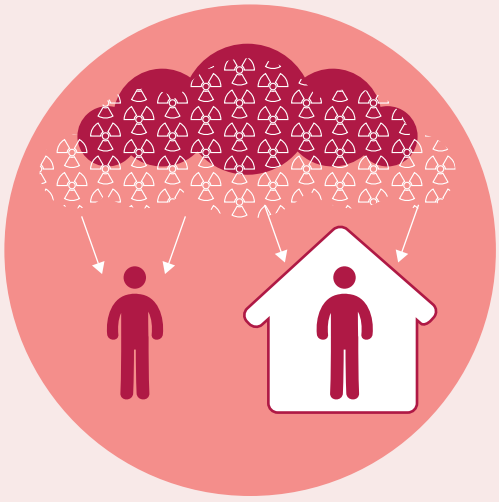
The implementation of these measures depends on the severity of the accident. Any decision relating to the implementation of a measure will be communicated to the population via the media and on the website **www.infocrise.lu**.

Taking shelter

This measure involves temporarily taking shelter in the closest house or building. Any doors, windows and shutters must be closed and any heating, ventilation systems, air conditioning and air regulators switched off. If applicable, the rainwater collection system must also be shut off. These actions can prevent radioactive release from entering the building.

This measure provides considerable protection in the event of radioactive release. Inside a solid enclosed building, the walls and the roof provide you with a screening effect against radiation from the outside.

The beginning and end of this protective measure, as well as the zones concerned, will be communicated to the population via the media and the website **www.infocrise.lu**.



There is no protection from radiation outdoors, whereas solid enclosed houses and buildings provide a level of protection that is up to 10 times higher.

DID YOU KNOW?

Depending on the type of building, the radiation dose is significantly lower indoors than outdoors. You are advised to remain in the lower rooms (ground floor, cellar) of the building. Rooms without windows or with very small windows should be given priority.

Clothes do not provide effective protection against radiation.

Vehicles, buses or trucks do not offer sufficient protection either.

It is better to stay indoors and subsequently be evacuated than to be exposed to radiation outdoors during the passage of a radioactive cloud.

Intake of potassium iodide tablets

If you find yourself outdoors during the passage of a radioactive cloud, you will inhale or ingest radioactive iodine, which will concentrate in your thyroid gland. The intake of potassium iodide tablets blocks radioactive iodine from being absorbed by the thyroid gland, thereby strongly limiting the radiation dose.

To this effect, the authorities are ensuring a preventive distribution of potassium iodide tablets to all the residents of the country. School establishments and child-care facilities have a stock of tablets in case of need. The parents of all newborns are given a box of tablets per child at the maternity hospital. Furthermore, the municipal authorities keep a sufficient quantity of tablets in stock to guarantee an additional distribution in the event of a nuclear accident.

Businesses have the option of ordering a supply of tablets via the website **www.infocrise.lu**.

Carefully read the leaflet enclosed with the box of tablets. It provides information on dosage, which differs for infants, children and adults. The intake of these tablets is not recommended after the age of 45, since the tablets have no proven beneficial effect for this age category.

The intake of potassium iodide tablets can produce side effects in some people. Individuals who are hypersensitive to iodine or suffering from a thyroid disease should seek the advice of their doctor.

The timing of intake plays a key role, given that the tablets are effective for 24 hours only. The tablets are to be taken only upon instruction by the authorities, this instruction being communicated to the population via the media and the website **www.infocrise.lu**.

Evacuation of the population

Depending on the radiological conditions, the authorities may, as a preventive measure, order the temporary evacuation of certain localities. The measures to be taken will be communicated to the affected population by the municipal authorities, the media and the website **www.infocrise.lu**.

What to do in the event of an evacuation?

Gather a change of clothing and footwear, toiletries and any essential medicines for each member of your family, preferably in a well-sealed plastic bag.

Carry your identity documents and a means of payment.

Lock any external doors.

If possible, use your own vehicle:

- Shut the windows of your vehicle and switch off the air conditioning and ventilation systems.
- Listen to one of the national radio stations.
- Follow the routes recommended by the law enforcement authorities.

Individuals who are unable to find refuge on their own outside the evacuation zones will be temporarily accommodated in reception centres set up by the authorities in different parts of the country.

If you are unable to leave your locality without outside help:

- Insofar as public transport remains operational, you can use it.
- Special transport will also be arranged. The authorities will designate assembly points from which evacuation by bus or train will be organised.

If you are unable to leave your residence without outside help:

- Sick, disabled or immobile individuals are to call their municipal administrations so they can be evacuated.
- The evacuation of school establishments and childcare facilities, hospitals, sheltered workshops as well as retirement or convalescent homes is organised by the authorities.

Food restrictions

The radioactive cloud contaminates the atmosphere and anything that comes into contact with it. After its passage, the authorities can prohibit slaughter or harvest activity and recommend that farmers keep their animals inside.

The meat, fish, vegetable and dairy trade will be strictly controlled. It is also possible that the consumption of certain foodstuffs will be prohibited. The authorities may recommend that only tinned, dried and frozen food or fresh produce from regions unaffected by the accident be consumed.

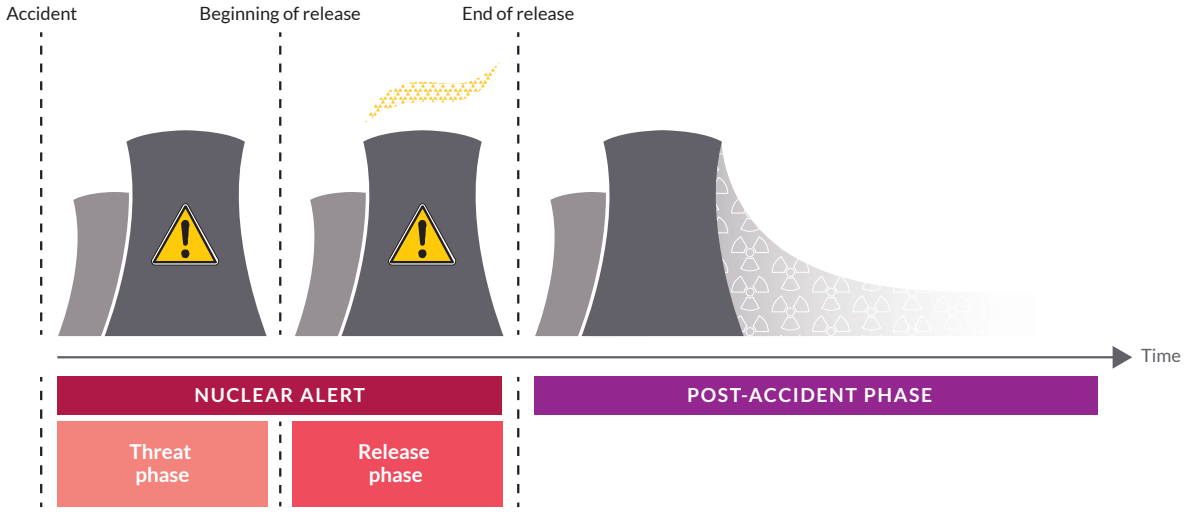
In principle, tap water remains safe to use.

The various food restrictions will, if applicable, be communicated to the population via the media and the website **www.infocrise.lu**.

THE CONDUCT TO ADOPT
IN THE EVENT OF A SEVERE NUCLEAR ACCIDENT

The Luxembourg population is alerted by the national siren network, which involves the rescue services within the municipalities triggering a specific siren signal. To avoid confusion with the "fire alarm" (a continuous tone lasting three minutes), the siren signal triggered in the event of a nuclear emergency will consist of three different signals: standby (preliminary alarm), nuclear alarm, all clear (end of alarm).

THE VARIOUS ACCIDENT PHASES



DID YOU KNOW?

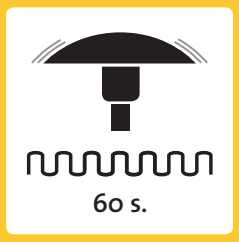
In the event of an accident at the Cattenom nuclear power plant, the power plant operator notifies the Luxembourg authorities via a dedicated network of phone lines known as the SELCA system (Système d'échange et de liaison entre Cattenom et les autorités – Exchange and liaison system between Cattenom and the authorities). As soon as the Luxembourg emergency call centre (112) is informed of a nuclear accident, it alerts the competent authorities on duty, which immediately carry out an evaluation of the information available.

Depending on the information provided by a person in charge at the power plant, the French authorities or the Luxembourg radioactivity surveillance network, the emergency response plan in the event of a nuclear accident is activated.

THE 3 ALARM SIGNALS

According to the circumstances (direction and speed of wind, quantity of radioactive release...), the three signals are triggered by each region, municipality or locality. The alarms are not automatically triggered throughout the entire national territory, only in the zones that are potentially under threat.

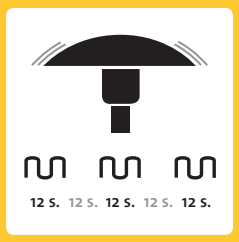
1



Standby

Warbling tone lasting one minute

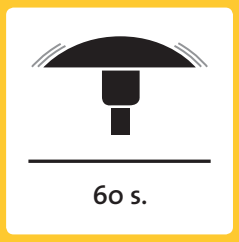
2



Nuclear alarm

Warbling tone lasting one minute,
interrupted by two pauses of 12 seconds each

3



All clear

Continuous tone lasting one minute

THREAT PHASE:
RADIOACTIVE RELEASE POSSIBLE, BUT NOT IMMINENT

When radioactive release on the national territory is possible but not imminent, the standby signal is triggered. In this threat phase, the emergency response plan in the event of a nuclear accident is activated. The authorities monitor the situation very closely in order to be able to act as soon as deemed necessary.

To protect yourself as effectively as possible during this phase, take a series of simple yet effective actions:

Stay informed via the media and refer to the website **www.infocrise.lu** to keep up to date with advice on how to protect yourself, as communicated by the authorities.

If you have children at a crèche or another daycare facility (*maison relais*, *foyer de jour* or *garderie*), go and pick them up.

Get your potassium iodide tablets ready! Ensure you have a sufficient quantity of these tablets for all the members of your household. Please note: take these tablets **only** upon instruction by the authorities, this instruction being communicated via the media and the website **www.infocrise.lu**. If you have misplaced your tablets, contact your municipal authorities.

Cover your vegetable garden with a plastic tarpaulin.

Avoid unnecessary travel or movement! Be aware that the authorities may decide at any moment that the population in certain regions must take shelter.

Special instructions for farmers

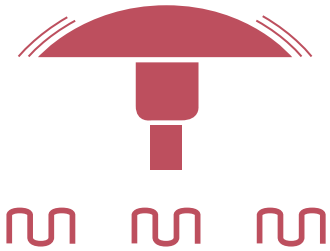
- Move your livestock into enclosed premises and restrict, as much as possible, the natural and artificial ventilation in these premises.
- Organise and store prepared feed in enclosed premises.
- Cover any silage stored outdoors with a plastic tarpaulin.
- Close any greenhouses.

In the event of a standby signal being triggered during school hours, school principals will organise for children to return home via school or public transport. The teaching personnel is in charge of the children for as long as they stay within the school premises.

DID YOU KNOW?

In the event of a severe accident in a nuclear power plant, radioactive release into the environment is most often not immediate. In a first instance, the majority of the radioactive substances are confined to the inside of the reactor building. Excessively high pressure within this building is what leads to the massive release of radioactive substances into the environment. The interval between the accident and the release can range from a few hours to a few days depending on how the accident unfolds. The authorities take advantage of this time span to implement the necessary protective measures.

RELEASE PHASE:
RISK OF RADIOACTIVE CLOUD



When a radioactive contamination on national territory is imminent, the nuclear alert signal is triggered. In this release phase, a radioactive cloud is in the process of forming near the power plant.

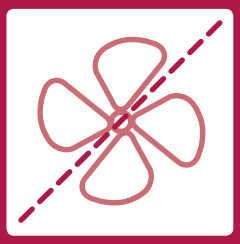
In these circumstances, it is imperative that you **stay calm**.

You will achieve optimal protection against the risks of radiation if you calmly take the following simple yet effective actions:

Stay informed via the media and refer to the website **www.infocrise.lu** to keep up to date with advice on how to protect yourself, as communicated by the authorities.

Take shelter! If you find yourself outdoors in the event of an alert, make your way as quickly as possible to a solid enclosed building, even if it is not your own residence. The measure to take shelter is decided by the authorities and communicated to the population via the media and the website **www.infocrise.lu**.

Close any doors, windows and shutters.



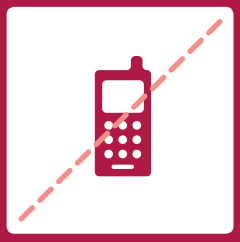
Switch off any heating, ventilation systems, air conditioning and air regulators of the building you find yourself in. If applicable, also shut off the rainwater collection system.

If your children are at school or at a daycare facility (*maison relais, crèche, foyer de jour* or *garderie*) when a nuclear alert is triggered and radioactive release is imminent, they will be looked after by the personnel of these establishments for the duration of the nuclear alert. Take note that these establishments hold a sufficient stock of potassium iodide tablets.

Get your potassium iodide tablets ready!
Ensure you have a sufficient quantity of these tablets for all the members of your household. Please note: take these tablets **only** upon instruction by the authorities, this instruction being communicated via the media and the website **www.infocrise.lu**. If you have misplaced your tablets, contact your municipal authorities.

Consume wisely!
You can consume any food stored in the building you find yourself in. On the other hand, strictly avoid eating freshly harvested vegetables or fruit.

In principle, tap water remains safe to use.



Limit your telephone calls and messages!
In the event of a nuclear accident, the telephone lines must not be overloaded, so as to allow rescue services to respond to individuals who find themselves in situations of distress.

DID YOU KNOW?

Rescue service responders are required to wear special protective suits in the contaminated zones. This way they avoid being contaminated during the passage of a radioactive cloud.

What to do if you stayed outdoors in the event of a radioactive release?

You are strongly advised not to stay outdoors in the event of a radioactive release.

If, however, you could not avoid doing so, comply with the following instructions to achieve maximum protection:

- Remove your footwear and the clothes you wore outdoors before entering a building. Store them in a plastic bag to prevent the spread of any possible contamination.
- Have a shower! Promptly wash all the exposed areas of your skin and most importantly your hair. This is a very effective action. Given that the radioactive release is deposited on your skin and hair, it can easily be removed with water. Wash your hair while endeavouring to protect your face as much as possible from the contaminated water.
- If your pets were outdoors during the release phase, they must also be washed. Pay close attention to not getting contaminated once more. If necessary, have another shower.

ALL CLEAR SIGNAL:
END OF THE DISPERSION OF THE RADIOACTIVE RELEASE

The all clear signal is communicated once the dispersion of the release by the radioactive cloud has ceased.