

A yellow triangular radioactive warning sign with a black radiation symbol and the text 'RADIOACTIVE II', 'MO-99', and '33.28 GBq'.

MEASURES TO BE TAKEN

IN THE EVENT OF ACCIDENTAL EXPOSURE TO IONISING RADIATION

IMPORTANT

WHAT YOU NEED TO KNOW

- Ionising radiation cannot be seen or felt. Exposure must systematically be confirmed by an analysis of the circumstances of the accident as well as radiological, clinical and biological assessment of the dose received.
- Where relevant, medical and surgical emergencies override the radiological emergency.
- The date, hour and nature of exposure or contamination should systematically be noted, as should contamination location.
- In case of irradiation, being aware of the following parameters helps to estimate the dose received: the characteristics and source of irradiation, use configuration and exposure scenario.

WHAT NEEDS TO BE IN PLACE

- The radiation protection officer must have details of the appropriate medical team to be contacted in case of a radiological accident (occupational health team or other).

WHAT NEEDS TO BE DONE

- The appropriate medical team must systematically be notified of the accident.

This fact sheet addresses the following exposure accidents:

- External irradiation
- External or skin contamination
- Internal contamination

IN CASE OF EXTERNAL IRRADIATION

- The individual exposed cannot contaminate others.
- They must be promptly removed from the emitting source. Access to the area must then be forbidden.
- The radiation protection officer must be informed of the emergency measures taken.

■ GLOBAL EXTERNAL IRRADIATION

- Survey the area with the radiation protection officer to assess the highest possible radiation dose received by the victim.
- Have the dosimeters read as a matter of urgency to estimate the dose received (results are to be made available within 48 hours at the latest).
- Consult the occupational physician.



■ LOCALISED EXTERNAL IRRADIATION

- This can lead to a feeling of burning and tingling (dysesthesia). In a dose > 4 Gy, erythema (redness of the skin) and even oedema can occur.
- Assess the dose received by the victim.
- Protect the irradiated parts of the body under sterile conditions to avoid any risk of infection.
- Consult the occupational physician.



IN CASE OF EXTERNAL OR SKIN CONTAMINATION

This is generally benign but must be treated promptly to avoid internal contamination.

BEWARE: before decontamination, the victim can contaminate others. Persons assisting therefore need to protect themselves against a potential transfer of contamination by wearing personal protective equipment (lab coat or Tyvek-type coveralls, mask and two pairs of gloves).

The radiation protection officer must be informed of the emergency measures taken.

- Carry out meticulous, repeated and non-forceful soaping, thorough rinsing and drying of the contaminated body parts.
- Cut contaminated hair and fingernails.
- Check any potential residual contamination after washing and repeat the process until contamination has been eliminated.

■ CONTAMINATION OF THE HEAD INCLUDING THE FACE

- Take a sample of the victim's nasal mucus by having them blow their nose in a paper tissue within an hour of contamination.
- Protect ear canals, eyes, nostrils and mouth and decontaminate:
 - nose and ears: cleaning nostrils and ears with cotton buds (cotton swabs) soaked in saline solution or water. Make a count of the cotton buds' residual radioactivity;
 - eyes: using compresses, carry out gentle washing with a saline solution or water (avoid using eye wash) from the inside to the outside;
 - mouth: careful rinsing (running water, soaked compress, etc.) ;
 - hair: cut contaminated hair, then wash with a gentle shampoo in a dedicated basin and rinse thoroughly.
- Consult the occupational physician.



- If the residual values measured after repeated washing are higher than background noise, isolate contaminated parts (for example by taping a glove around the wrist, or taping a plastic bag around the arm). In all cases, if contamination persists despite properly conducted decontamination procedures, direct the victim to the appropriate medical team where decontamination may continue with specific products and methods.
- Place the contaminated person's clothing together with the products used for decontamination (including wash water) in closed, waterproof and labelled containers so that they can be eliminated in specialist disposal centres or dealt with in decreasing stages.

■ GENERAL CONTAMINATION

- Place a plastic cloth on the floor with the victim standing at its centre.
- Ask the victim to undress (help them if necessary) and take care not to spread contamination: roll clothes up from the inside to the outside (cut them up if necessary). Wrap them in the plastic cloth and place everything in an appropriate waste bag ready for disposal. This procedure can remove 80 to 90% of contamination.
- Ask the victim to soap themselves thoroughly, wash their hair, rinse and dry themselves thoroughly.
- Check the absence of residual contamination.
- Consult the occupational physician.



BEWARE, external contamination may be complicated by internal contamination.

IN CASE OF INTERNAL CONTAMINATION

Any internal contamination must be treated as soon as possible, as the effectiveness of potential treatment rises with the speed of its implementation.

Before treating internal contamination specifically, gently decontaminate:

- the face with soap and water using compresses, wiping from the orifices to the outside edge of the face,
- nostrils and cotton buds soaked with saline solution or water,
- where applicable, the rest of the body with careful soaping and rinsing.

■ CONTAMINATION VIA SKIN CONTACT

- If the skin is healthy, it acts as a barrier against most radioactive substances except tritiated water and iodine. Wash with soap and water.
- If the skin is damaged (wound, needle stick injury, burn, eczema-type skin damage, psoriasis, superinfected acne, etc.), wash with soap and water.
- Consult the occupational physician.



■ CONTAMINATION VIA INHALATION

This contamination pathway concerns the most volatile radioactive elements.

- Consult the occupational physician.
- Time stamp and keep all of the victim's urine and faeces for a radio-toxicological examination (in order to monitor contamination decrease). Repeat with the paper tissues.

Do not prevent the victim from coughing spontaneously as this encourages the expulsion of inhaled radio-contaminants.



SPECIFIC CASE

THE INHALATION OF RADIOACTIVE IODINE

The target organ being the thyroid, there is a specific protocol which is carried out by the physician in charge of providing medical monitoring. Potassium iodide (KI), which inhibits the binding of radioactive iodine to the thyroid, needs to be administered promptly, to limit the risk of irradiation.

REMEMBER

A workplace accident must be declared to the Human Resources Department as soon as possible (preferably within 24 hours), by submitting a medical certificate and a workplace accident declaration form:



https://intranet.cnrs.fr/Cnrs_pratique/recruiter/Pages/D%C3%A9claration-d%E2%80%99accident-du-travail-et-de-maladie-professionnelle.aspx «**Déclaration d'accident du travail et de maladie professionnelle**»