

GENERAL RULES OF RADIOLOGICAL SAFETY

Main reference documents applicable:

- ❖ Law 111/1996, republished, on the safe performance, regulation, authorisation and control of nuclear activities, as further amended and supplemented.
- ❖ Fundamental norms of radiological safety approved by CNCAN Order no.14, of January 24th, 2000 and published in the Romanian Official Gazette no.404 encore, of August 29th 2000, available for consultation on www.cncan.ro.
- ❖ Other CNCAN Norms applicable and specific radiation protection procedures at the level of IFIN-HH and departments level as well.
- ❖ The intervention plan in cases of radiological emergency on IFIN-HH premises Group I, review in force.



The specific of our activity involves an inherent radiological risk in certain departments. Therefore, through adequate policies, technical and organisational measures and periodical trainings, we always take care that our activity is performed under high safety conditions. Also:

- ❖ We observe strictly the legal and regulatory requirements on radiological safety, safety and health at work, emergency situations, physical protection and environment;
- ❖ We provide permanently the dosimetric monitoring of the entire personnel;
- ❖ The spaces where we work are separated into controlled areas and supervised areas, areas where strict measures are imposed for the prevention, control of exposure and diminution of radiological risks;
- ❖ Each employee, visitor, external collaborator or contractor is informed and trained on the risks of the activity in controlled and supervised areas as well as the protection and prevention measures.

All activities performed in radiological areas have procedures defined and the measures for the optimisation of radiation protection and the implementation of ALARA principle (As Low As Reasonably Achievable) are permanently updated and continuously improved.

Radiation protection means provided

in IFIN-HH

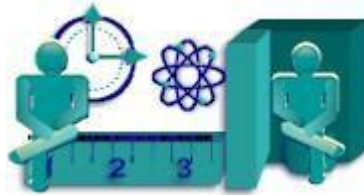


In order to provide radiological safety to the professionally exposed personnel, to the population and the environment, IFIN-HH:

- ❖ Performs all activities that involve radiological risks within the limits and conditions of the permits issued by the National Committee for the Nuclear Activities Control (CNCAN) which represents the national authority in the field of regulation, authorisation and control of nuclear activities in Romania;
- ❖ Provides the periodical medical supervision of the entire personnel;
- ❖ Provides a wide range of personal equipment for protection against ionising radiations and also collective equipment for radiation protection and equipment for radiation monitoring. Also, you can find the necessary equipment to provide radiological safety against normal and potential exposure (gate, locker, healthcare point, decontamination options, radiation protection means, dosimetric devices, safety systems, etc.);
- ❖ Permanently provides both the monitoring of the work environment and the monitoring of radioactivity in the environment;
- ❖ Has laboratories notified by CNCAN for personal dosimetric monitoring activities of external exposure and internal contamination of the personnel, with dosimetric film, thermo-luminescent dosimeter and human body counter, estimating the dose equivalent and actual doses;
- ❖ Provides the safe management of institutional radioactive waste resulting from the activities performs in accordance with the regulatory requirements;
- ❖ Provides the proper training of professionally exposed personnel, in the field of radiological safety and maintains the level of training and technical competence of the entire personnel, through both adequate training programs organised at department and institute level and permanent participation in CNCAN authorized courses, international conferences, workshops, seminars, etc.;
- ❖ Classifies working places depending on the radiological risk, according to the specific criteria established by CNCAN;
- ❖ Performs the classification on categories of radiological risk of professionally exposed persons, in accordance with the legal and regulatory requirements applicable;
- ❖ has implemented control and surveillance measures adapted to different areas and work conditions, including the ones of personal surveillance, when required;
- ❖ monitors the exposure to radiation in case of accidental and emergency exposure;
- ❖ in case of contamination, it has the procedures and necessary infrastructure for decontamination.

Also, IFIN-HH uses, in the practises involving radiological risks, only personnel who have practice permits valid for that activity, classified on three levels:

- ❖ level 1 - for workers in the radiological field;
- ❖ level 2 - for those in charge with radiological safety and persons leading activities with radiation sources;
- ❖ level 3 - for experts certified in radiological protection.



IFIN-HH is constantly preoccupied with radiation protection optimisation, which relies on the following prevention means:

- ❖ **time** (reducing the exposure period);
- ❖ **distance** (increasing the distance between the worker and the radiation source);
- ❖ **protection** (using protection barriers, such as lead or concrete shields between the workers and the radiation source. The type of protection is chosen and used depending on the type of radiations and energy.)

Thus, all activities involving work with radiations and radioactive materials is done based on defined procedures, in accordance with the limits and conditions set in the permits issued by CNCAN, by the personnel with technical competencies and with equipment and installations that have radiological safety permits.

Access in the areas controlled from a radiological safety point of view is done based on the access procedures specific to the area and with the approval of the head of that entity.



Access in areas in which you are not authorised is forbidden!



GENERAL INFORMATIONS

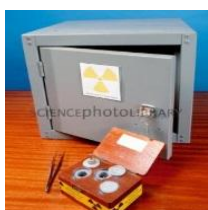
The basic radiation protection rule is the ALARA principle: As Low As Reasonably Achievable. At the IFIN-HH we apply this principle and we therefore respect the annual effective dose limit for the exposed workers of 15 mSv/ y, corresponding to an average effective dose rate of 7.5 μ Sv/ h, assuming 2000 working hours per year. For the non - exposed workers, the annual effective dose is 1 mSv/ y and the effective dose rate of 0.5 μ Sv/ h in the same conditions as the exposed workers.



Electronic dosimeters are positioned around the accelerators and on the beamlines and permanently record the photon and neutron dose in about 23 different locations (μ Sv/ h).



Regular and systematic radiation surveys are made around all beamlines, both by an external system of radiation protection instrumentation.



. The IFIN-HH radiation protection service has different radioactive sources available for the beamlines to calibrate detectors. These radioactive sources can only be used by authorized employees, who have received adequate safety training and information. When necessary, contact your Local Contact.



The personal dosimetric monitoring is made with the termo-luminescent dosimeter and the personal electronic dosimeter for external exposure.

Obligations of professionally exposed persons

- ❖ not to expose themselves and others to radiations over the reasonable values necessary for the performance of work tasks;
- ❖ not to use radiation sources or nuclear installations for purposes other than those they have been created and certified for, or for works other than those resulted from the work tasks;
- ❖ to wear the personal protection equipment and the personal monitoring means;
- ❖ to inform immediately the person in charge with radiological safety in the department where he/she works, about any malfunction observed in the personal protection equipment, in the collective protection equipment or in the warning system;
- ❖ to hand over, immediately after use, at the place of storage, the personal protection equipment and the personal monitoring means;
- ❖ to comply with the work instructions and with the indications of the person in charge with radiological safety for the controlled or supervised area;
- ❖ to come at the medical examinations or tests requested by the competent physician and to give all details related to the status of his/her health requested by the competent physician;
- ❖ to immediately notify, also in writing, the person in charge with radiological safety or the management of the department, every time he/she has solid reasons to believe that he/she or somebody else suffered an overexposure or a special event occurred such as the loss/theft of a radiation source, radioactive material leakage, malfunctions that endanger the safety of radiation sources, nuclear installations or the integrity of the protection means;
- ❖ to participate in the intervention exercises in cases of radiological emergencies and at sessions for testing knowledge in the field of radiological safety;
- ❖ in order to protect the contamination checking equipment, at the entry/exit in/from the controlled radiological areas, it is that women avoid wearing shoes with sharp heels.



In case of contamination, you must go through the decontamination procedures in accordance with IFIN-HH regulatory requirements and procedures in force.

Immediate measures in case of radiological emergency

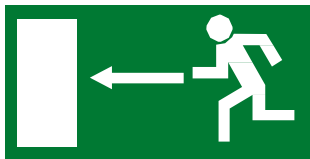
- ❖ limiting the movement of persons that are not involved in the intervention or limiting the shifting between the buildings, by signalling/marketing the areas/the forbidden access points;
- ❖ closing the windows, windows and air ducts;
- ❖ shutting down the ventilation systems;
- ❖ sheltering and/or evacuating the personnel;
- ❖ offering first aid.

Behaviour in case of emergency



Keep calm!

- ❖ In case of emergencies, calmly leave the room following the evacuation route.



- ❖ If needed, use first intervention means located in the building.



- ❖ Do not take with you umbrellas, luggage, large and heavy packages.

- ❖ Save those who are in danger.

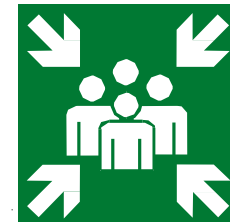
- ❖ You must behave in such way as not to create alarm and panic attacks in the halls and especially on the stairs.



- ❖ Walk calmly towards the emergency exit accompanied by the person appointed.

- ❖ Go to the gathering place established and marked accordingly.

- ❖ It is recommended that women wearing high heel shoes take them off before descending the stairs.



- ❖ Follow exactly the instructions sent by the public alarm system in case of emergency, the acoustic alarm signals and the corresponding markings. Do not take any initiative on your own. You risk unnecessary exposure to hazards.

- ❖ For events that you cannot solve by yourself, according to Intervention plans in case of emergency, call **112**.

- ❖ If smoke goes inside, in order to protect the airway, cover your nose and mouth with a wet handkerchief.