



To the Director of Firenze INFN Section
Dr. O. Adriani

Subject: Information on the risks arising from exposure to ionizing radiation due to accelerator and other radiological and radioactive sources present at the INFN Section; to be communicated to the Employers of foreign external workers and/or in any case to workers with risk from ionizing radiation.

Dear Director,
herewith I send you the information for Employers of foreign external workers and/or to users with risk from ionizing radiation

Information on the risks deriving from exposure to ionizing radiation at the radiogenic sources of the Firenze Section of the INFN

The present document is drawn up pursuant to Legislative Decree 101/20, art. 112, paragraph 1), letter m) for activities at the Section's radiogenic sources and contains information:

- A) useful to users, not personnel of the Section (employees, associates and equivalent to them), who must carry out work activities with risk from ionizing radiation at the Section
- B) on the risks deriving from exposure to ionizing radiation existing in the classified area in which the external worker could be destined to operate
- C) on the prevention, protection and emergency measures to be adopted in relation to the activity to be performed.

- **TANDETRON 3MV Accelerator**

As a rule, the access and permanence of users, workers with occupational exposure, is allowed only in areas classified as "no restrictions" *

OTHER RADIOLOGICAL DEVICES

The activity carried out by users at other minor LNL radiological devices (X-ray tubes) takes place exclusively in areas classified as "unrestricted area" *.

OTHER RADIOACTIVE SOURCES AVAILABLE TO THE USERS

The use of calibration sources available to users does not require the definition of a classified and regulated area where they must carry out their activities.



SUPPLEMENTARY INFORMATION

To facilitate the user to comply with the above as well as for the correct compilation of the radiation protection form, the following is specified:

- ***Tandetron Accelerator***

- ***Unrestricted Zone:***

- a) *During conditioning:* the area of the experimental room delimited and separated from the tank area of the machine
- b) *With accelerated beam:* the control room and the accelerator data acquisition room
- c) *With the accelerator off:* the entire room where the machine is located, the control room and the data acquisition room.

*Definition of the "unrestricted zone":

unrestricted area: an area or areas adjacent to the classified areas, not subject to access regulation, where physical surveillance of radiation protection is adopted pursuant to art. 130, paragraph 1 letter c) of Legislative Decree 101/2020, and where values lower than the exposure limits for individuals of the population are guaranteed as established by Article 146, paragraph 7, of Legislative Decree 101/2020 .

Regarding the risks deriving from exposure to ionizing radiation existing in the classified area in which the external worker could be destined to work, the intervals of neutron and/or X-gamma ambient dose equivalent rates are reported for classified areas:

Controlled zones

Dose rates between 1 microSv/h and a few tens of microSv/h depending on:

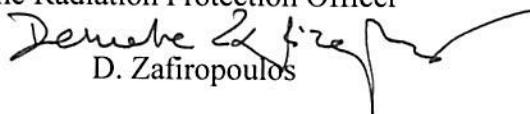
- the type of radiation (particles of the beam, energy and beam current)
- the conditions and type of radiological device
- of the irradiated target
- the distance from the beam line (specifically, from the interaction points of the primary beam with the accelerator structures and/or with the target)

Supervised zones

Dose rates between: 0.15 microSv/h a <1 microSv/h (background 0.10 microSv/h).

Furthermore access control systems and other safety devices installed at accelerator and minor x-ray machines (X-ray tubes), together with what is reported in the internal on radiation protection rules, if scrupulously complied with, reduce to negligible values the risk of presenting emergency situations in relation to the activity to be performed.

The Radiation Protection Officer



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The Director



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IL DIRETTORE
(Prof. O. Adriani)