



Raphael Maion - Safety Engineer MSST - Occupational Health Environment Prevention Safety

Giuseppe Iacobucci - Professeur et Directeur du DPNC (Département de Physique Nucléaire et Corpuculaire)

Didier Ferrère - Scientific Assistant and Radiation Protection Expert for DPNC

Information sheet to be signed by each personal dosimeter applicant (also valid for CERN applications)

The applicant acknowledges by signing¹ this information form that:

1. He has read the basic instructions concerning the behavior to be adopted in the presence of monitored or controlled areas and presenting dangers related to exposure to ionizing radiations (Appendix 1)
2. The wearing of a personal dosimeter is compulsory when required, ie before entering areas where a risk is recognized and marked (Appendix 2)
3. The medical examinations are no longer prescribed by the SUVA to be entitled to wear the dosimeter. Competent authorities may impose medical examinations only in the exceptional case and when measured dose are exceeding the authorized limit. The lack of a preventive medical examination reinforces the requirement 2) to wear your personal dosimeter when requested.
4. He will comply with the requirements of the radiation protection expert within the University or the competent authorities outside the University (during collaborative working trip) and with the access rule and handling of radioactive sources and materials.
5. In case of open wounds or skin disease it is advisable to inform the radiation protection expert before handling any unsealed or open sources in order to assess if special precautions should be adopted.
6. It is strictly forbidden to drink or eat in areas identified as being at risk (Appendix 2)
7. Handling and exposure to ionizing radiation must be carried out in a well-considered manner and in accordance with ALARA (Appendix 1)
8. Pregnant or nursing women should not be exposed to ionizing radiations, and should refrain from access to areas identified as being at risk (Annex 2)
9. That the applicant undertake to follow the "Radioactive hazards" module organized by the STEPS service
10. Not complying with the rules defined by the radiation protection expert will result in warnings from the supervisor, which could lead to an administrative procedure and end-up with sanctions.
11. That this form, dated and signed, will be archived by the secretariat of the department in which the request is made.

Geneva on:

Name of applicant:

Stamp of the department

Signature preceded by "read and approved"

¹ All the following pages must be initialed



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Appendix 1 : Some basic instructions

The activity of a radioactive material is measured in Becquerel (1 disintegration per second) and the dangerousness or impact on our organism or biological effect is expressed in Sv (Sievert) >> mSv >>> μ Sv >> nSv.

Radioactivity is present everywhere at a relatively low level and is not a danger when exposed to doses compatible with our environment and lifestyle (earth, cosmic rays, air travel, food, radiographic exposure, ...). In some professional activities it is possible to the personal need to cope with an additional exposure which is to be compared to those related to our way of life. The annual dose rate of a person not exposed to radiation in a natural environment receives between 1 and 3 mSv / year while the limit defined by the ORaP is 10 mSv / year defined in a professional activities.

Radiation is classified into 4 types:

- Gamma particles including X-rays
- Beta particles (electrons or positrons)
- Alpha particles ($2p + 2n$)
- Neutrons

The prescribed basic rules are called ALARA (As Low As Reasonably Achievable), which means that radiation exposure should be limited as much as possible and justified. In order to limit the exposure to radiation three basic rules are to be retained:

- Limit exposure time
- Take distance if possible while securing operations and exposure. The radiation level varies as the inverse of the distance to the square from the source.
- Protect yourself by shielding the workspace for yourself and others.

These different radiations do not interact in the same way with the material and therefore to protect themselves it is important to understand how to shield and limit the dose rate beyond this barrier (Figure 1).

¹ ORaP (Ordonnance sur la Radioprotection) : <https://www.admin.ch/opc/fr/classified-compilation/19940157/201401010000/814.501.pdf>

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Appendix 1 : Cont.

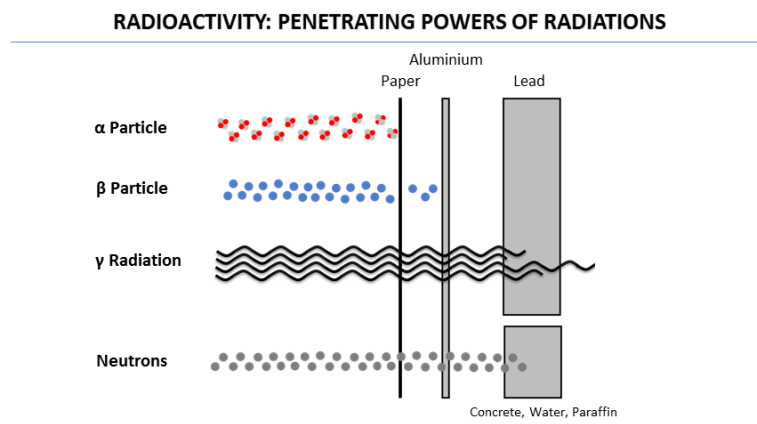


Fig 1 : Typical shielding according to radiation type

When a source handling is needed installation or when a new experimental bench is to be set-up, the radiation protection expert must be informed before defining a new project. The radiation expert will give the final approval after preparation of the bench when adequate shield and acceptable radiation dose are measured in the surrounding before use. Recommendations will be suggested to improve the shielding in case it is considered not acceptable. An instruction sheet for daily usage and handling should be prepared and the information described in there should be validated by the radiation protection expert. This will be displayed in front of the experimental test bench to inform any operator but also all other users sharing a neighboring or common workspace.

NB:

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Appendix 2 : Marked areas

Any signs as shown in Figure 2 indicate that there is a risk of radiation exposure and requires wearing the personal dosimeter (exceptions if any will be mentioned at the entrance to the room).



Fig 2 : Informing a potential hazard to radiation exposure

Exemption for wearing a dosimeter will be explicitly mentioned at the entrance of a room but only when the equipment or source is not active or when the level of shielding is high enough to release the access rule. If the operator will need to handle to source outside the shielding or the storage container, he must inform the people in the surroundings to wear the personal dosimeter or forbid the access until the source is in a safe position in term of dose rate exposure if the person does not own a dosimeter.