# BASIC INSTRUCTIONS ON RADIATION PROTECTION: USE OF SEALED RADIOACTIVE SOURCES AT IFIC

These **instructions** are **compulsory for all workers, visitors and students** handling low activity sealed radioactive sources at IFIC laboratories.

Their aim is to promote safe practices and to prevent accidents or any health damage to their users as well as to the rest of the IFIC community and visitors.

In case of **non-observance** of these instructions, the **Radiation Safety Officer** can take any measure he/she considers, even to **interrupt the activity**.

In the case of **sealed radioactive sources**, the **main risk** is **external irradiation** exposure. Even if their activities are very low (lower than the exemption activity limits, in most cases for IFIC sealed sources) and the expected personal doses are under 1mSv/year (lower than the limit for the public or unexposed workers), following the **ALARA** (As Low As Reasonably Achievable) **criterion**, the dose must be kept as low as reasonably possible, in order to reduce the stochastic effects of ionizing radiation. Thus, the **main basic radiation protection rules** when using a source are:

a) Keep the **distance to the source** to the **maximum** possible, and avoid touching it directly by **using tweezers**, etc. The dose is inversely proportional to the square of the distance.

b) Limit the **time of handling** to the **minimum** possible, in order to reduce exposure. The dose is directly proportional to the exposition time. So:

- **Always keep the sources in their boxes and in their storage places when not in use**. Only take them out when you are going to perform the measurements, and just for the time required to do them. Once the measurements had finished, the source must return to its box and to the storage place. **Do not leave radioactive sources unattended** on the tables or anywhere.
- Before taking a source out of their storage place, **be sure to know the source you need**. Once you have taken it out, **note all necessary information about it** (isotope, activity, date, reference number...).
- **Take the source by its lateral faces**, and **avoid touching the active area**, in order to limit exposure as well as to prevent damages to the sealing material.
- **Do not damage or mechanically modify** the source holder or the source surface (do not use scotch tape, scratch it, etc...) and do not put the source in a hazardous environment, without prior agreement of the radiation protection officer (vacuum, high or low temperatures, etc...)
- Only in some cases, if the activity of the source is low enough, you can handle the source directly with your hands. In this case, **use gloves to prevent any contamination risk**. **The gloves must be thrown away after use.**

c) When time and distance are not enough, you must use a **shielding** to reduce the exposure. The shielding must be appropriated for each kind of emitted radiation. **Ask your teacher or the Radiation Safety Officer about the shielding you need** before using a new source.

d) **It is strictly forbidden to smoke, eat, drink, or the use of cosmetics** at the laboratories, in general and specially when handling radioactive sources to prevent any intake of radioactive material.

e) **Any external visible damage to the source must be immediately communicated to the teacher or to the Radiation Safety Officer**. In such a case, the source must be kept in its box, at their storage place, but separated from the others, and must not be used. A **warning indication** must be added to the box, to avoid others to use it.

f) **In case of any incident or accident while using the source, ask immediately to the teacher or the Radiation Safety Officer**.

**Before using any radioactive source, be sure you have read and understand these instructions, and ask your teacher or the Radiation Safety Officer about any question you may have.**

**RADIATION SAFETY OFFICER at IFIC: Rosa Carrasco Tel. (external call) 963543701; (internal call) 43701**

**EMERGENCIES NUMBER: 112**