

Radiation Safety Instructions



1. The radioactive areas (used for storage and handling) in the laboratory are marked with the label -
2. **Avoid unnecessary movement** in the labeled areas. Unauthorized access to radioactive sources is strictly prohibited.
3. Handling of radioactive sources is to be done under strict supervision of an authorized person trained for radiation safety. You need to **fill up the log book** meant for usage of radioactive sources without fail.
4. **External exposure** to radiations (i.e. when radioactive source is outside your body) is controlled by **TIME, DISTANCE and SHIELDING** concept:
 - (i) **Limited TIME** of exposure to the sources.
 - (ii) Maintaining **maximum practicable DISTANCE** from the sources using gloves/tongs.
 - (iii) Using **suitable shielding** materials (such as perspex for β and lead blocks for γ radiations).

NOTE: γ , X and neutron radiations are most serious as external radiation hazards due to their ability to traverse large distances.
5. **Internal exposure** (i.e. when radioactive source is inside your body) to radiations can cause potential radiation hazards if inhaled, ingested or absorbed through the skin, leading to dangerous exposure to internal organs. So use protective clothing (gloves, masks) and maintain clean working conditions while handling liquid unsealed sources.

NOTE: α rays are most serious as internal radiation hazards due to their inability to come out of the body.

6. In nuclear physics laboratory, you will mostly use **sealed sources** which are small in size and portable. So extra care must be taken to secure them. **DO NOT MOVE OUT OF THE EXPERIMENT AREA CARRYING THE SOURCE WITH YOU.** Place the sources back in their cases after finishing your experiment and return it to the lab-in-charge.
7. **Eatables are strictly prohibited inside the laboratory.**
8. Avoid tampering the sealed sources. Please inform the instructor & lab-operators immediately if you suspect any tampering or leakage from the source. **IN CASE OF LOSS OF A SOURCE INFORM THE INSTRUCTOR/LAB-OPERATOR IMMEDIATELY TO TAKE PRECAUTIONARY ACTION TO AVOID RADIATION EXPOSURE.**
9. If you are using unsealed liquid radionuclides, work shall be carried out in a double container or over trays lined with absorbent paper to restrict the spread of any spilt liquid. The bench of the work area shall be covered with absorbent paper.
10. In the event of a spill verbally warn others, restrict unnecessary movement into and through the area, **report the spill immediately to the instructor or Radiation Safety Officer (Dr. Sudakshina Prusty) for further action.**
11. Any kind of contaminated waste (gloves, masks, absorbent papers, containers etc) is to be disposed ONLY into the trash containers designated for radioactive waste.