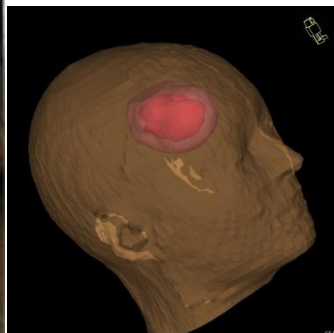




TC for ionising radiation; Dosimetry, Radionuclides and Neutrons

TC-IR

Radiotherapy

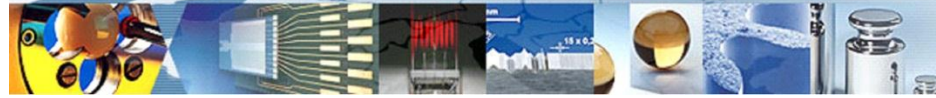


Climate



Statens strålevern
Norwegian Radiation Protection Authority





Dosimetry and Radionuclides in Health Care

Health care: Radiotherapy and **Radiation Protection** for both **patients** and **workers**

About 75% of **4 million new European patients** with cancer are treated using radiotherapy. This rate is expected to increase due to:

- Improvement of diagnostic methods
- Global ageing
- New treatment modalities and irradiation techniques

About one diagnostic exam per person and per year. A need to control radiation protection of patients in:

- New improved diagnostic modalities
- New diagnostic equipment
- Global ageing

About 23 mill. workers exposed to radiation world wide mainly in developed countries. 7,5 millions in medical uses.

- lower limit of exposure (e.g. cataract)
- Increased number of workers due to production and decommissioning issues
- Needs for better definition of quantities and measurement protocol

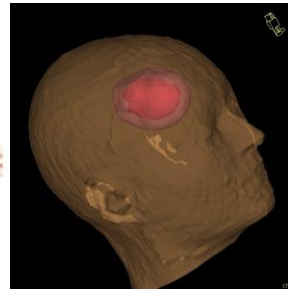
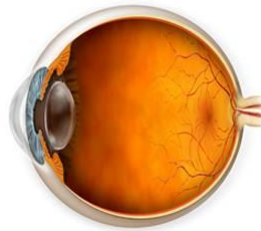


Dosimetry and Radionuclides in Health Care

- Traceability of the patient dose in complex forms of radiotherapy
 - Rotational therapy and robotic techniques using small fields
 - Online imaging (Conebeam CT, MRI linacs)
 - New electron brachytherapy sources
 - Protontherapy, Hadrontherapy
 - Targeted radionuclide therapy
- Novel diagnostic equipment
 - new CT scanners (two tube scanners, 256 line scanners)
 - new or adapted quantities well suited for new diagnostic modalities
- Challenges for radiation protection dosimetry
 - Stricter limits on eye lens
 - Definition of operational quantities



Dosimetry and Radionuclides in Health Care



Improved metrology for dosimetry will:

- improve sustained patients' Quality of Life (higher cure rate and reduction of side effects)
- facilitate faster clinical dissemination of new radiotherapy, and diagnostic techniques
- enhance safety of European working environment
- lower the radiation burden to the European citizen by improved optimisation of dose and image quality.

