REPUBLIC OF SLOVENIA
MINISTRY OF THE ENVIRONMENT AND SPATIAL PLANNING
SLOVENIAN NUCLEAR SAFETY ADMINISTRATION

ICRP 103 and Authorization and Inspection Processes

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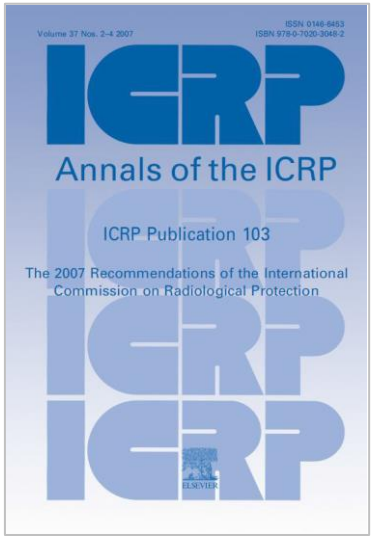
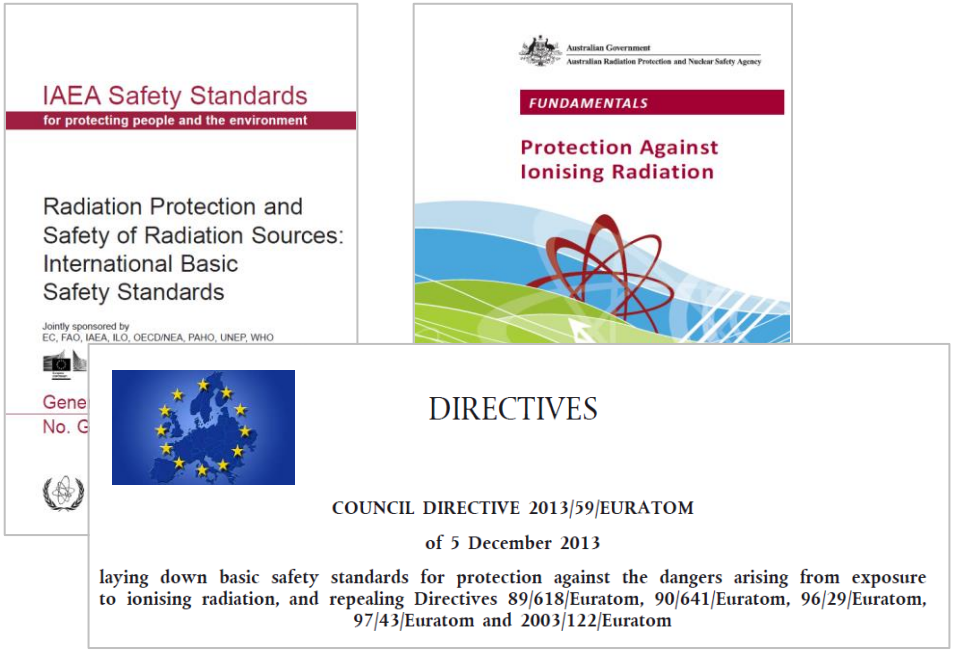
Introduction





- From the ICRP 103:

„International organisations and national authorities responsible for radiological protection, as well as the users, have taken the recommendations and principles issued by the Commission as a key basis for their protective actions.“

Authorization and Inspection

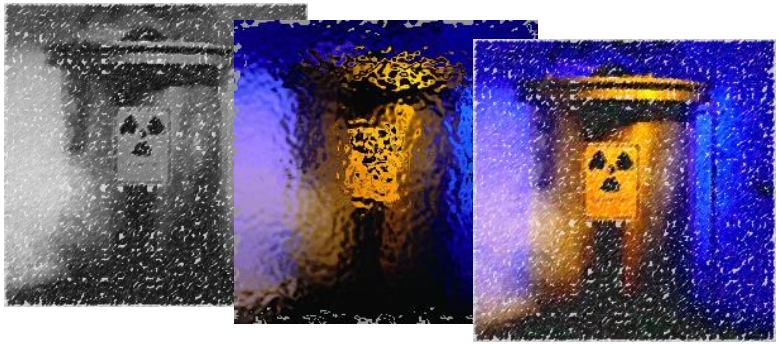
- Authorization and inspections are two of the main core processes of regulatory authorities.
- Very often inspections are the most visible part of the regulatory authority activities.
- Both processes are focused on the regulatory authority decisions.
- The decisions are unambiguous:
- The regulatory authority issues or declines to issue an authorization.
- Inspector‘s assessment confirms that either legally biding requirements are in place or incompliances exist.

- The implementation of ICRP 103 concepts shall support these decision-making processes.

Authorization and Inspection

- Authorization and inspection processes are decision-making processes.

Recommendations



Authorization and inspection

Authorization and Inspection

- The implementation of ICRP 103 is a huge endeavour in every country.
- As a rule, several tens of documents are updated e.g., strategies, laws, regulations, guides and emergency plans.
- Responsible parties involved include:
  - scientists
  - designers and operators of facilities, equipment and sources
  - regulatory authorities
  - qualified experts and technical support organizations
  - emergency preparedness agencies
  - environmental agencies …

- The harmonization of recommendations and guides on the global scale contributes to efficient and effective implementation in new and in somehow „old" regulatory framework.

Selected Open Issues related to ICRP 103

Case 1: Justification and optimization principle

- The justification principle is based on assessment of good and harm.

- In planned exposure situation different risks are assessed, among them radiation risk and associated detriment.
- The optimization principle addresses the radiation detriment i.e., influences the justification process.
- Further recommendations on such influences are welcomed.

Selected Open Issues related to ICRP 103

Case 2: Practical implementation of justification principle

- Regulatory authorities for radiation and nuclear safety are confronted with applications related to radiation sources used for new purposes such as:
- non-medical exposures related to sport activities
- non-medical exposures relate to a control of weight.
- The assessment of „good and harm" in justification process requires:
  - identification of relevant stakeholders
  - communication assuring transparent justification process
  - foreseen re-evaluation of justification when needed...
- Further recommendations are welcomed.

Selected Open Issues related to ICRP 103

Case 3: Justification principle and disused sources

- In the past regulatory frameworks were very often oriented to the beginning of a lifecycle of a particular facility and activity with radiation sources e.g., to inicial authorization process.

Justification principle is applicable during all life phases of facility and activity with radiation sources e.g., managing ageing nuclear power plants and disused sources.

- In particular, the risk due to orphan sources has been identified as one of the main regulatory issues in last decades.
- Further advice on justification of exposures related to disused sources are welcomed.

Selected Open Issues related to ICRP 103

Case 4: Implementation of dose constraints for members of the public

- Dose constraints are not to be used as „regulatory limit".

- But, the regulatory authority sets the control on the doses of members of the public associated with a particular source.
- As a rule, this control is established through authorization process setting legally enforceable „public dose limits related to a particular facility" which is usually well bellow 1 mSv/y.

Selected Open Issues related to ICRP 103

Case 5: Optimization bellow reference levels

- The implementation of reference levels e.g., in Radon Action Plan, and associated regulatory regime is a challenge for a regulatory authority.
- Several factors contribute to complexity of regulatory approach:

- lack of reliable data related to measurements and dose assessment as a basis to develop effective regulatory regime
- changes in dose calculations
- several new stakeholders involved in regulatory regime
- changes in physical characteristics of objects…

- Note:

  The optimization which shall take place also bellow reference levels, is very often forgotten.

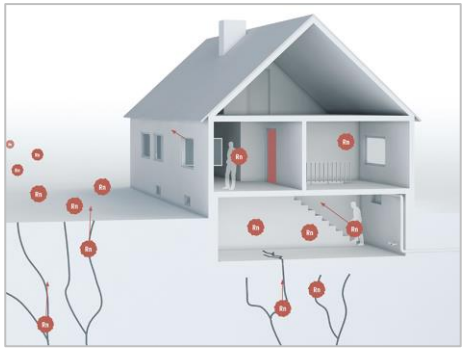
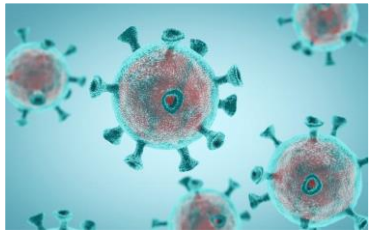


Photo: https://www.bfs.de/SharedDocs/Bilder/BfS/EN/ion/environment/radon-grafik-en.jpg;jsessionid=3F2EEEC0C292489DE0860591CE756332.1_cid339?__blob=poster&v=3

Selected Open Issues related to ICRP 103

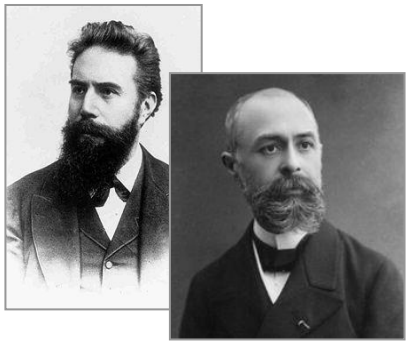
Case 6: Implementation of radiation safety concepts and COVID-19

- The implementation of ICRP 103 in regulatory practice has been challenged and it is still challenged due to the COVID-19 pandemic.
  - Risk assessment have been changed.
  - Inspections are largely influenced.
  - Authorization of needed medical equipment has been a subject of changes.
  - Management of exiting exposure situations was postponed...
- Analysis of lessons learned from the pandemic time and its influence on implementation of ICRP concepts might be useful.
- In addition: What can we learn from the pandemic when addressing public perception of new and somehow abstract concepts?



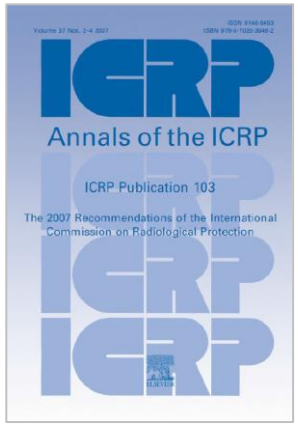
Conclusion

- The regulatory authority decision-making processes are dynamic processes challenged either by too large flexibility or by prescriptive regulations not allowing flexibility when needed.
- All practical advices on how to implement state-of-the-art radiological standards which are a subject of constant upgrading are very welcomed.



W.C. Roentgen (1895) H. Becquerel (1896)

ICRP (1928)



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