



**Strål
säkerhets
myndigheten**

Swedish Radiation Safety Authority

The need for bridging the gap between theory and practice

an authority's perspective in some identified areas

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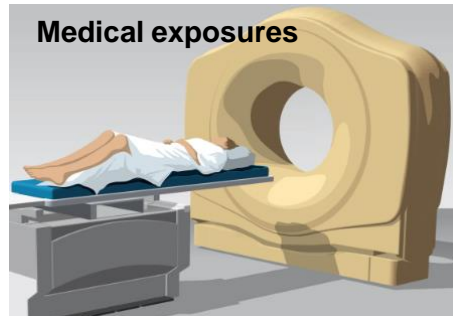
Keeping the ICRP recommendations fit for purpose

- SSM considers the current system to be robust and to a large extent fit for purpose, but
- Experiences from using the recommendations have indicated a need for clarifications and possible adjustments in a few areas:
 - Medical applications
 - Nuclear and radiological emergencies
 - Potential exposure of workers
 - Protection of the environment



Medical applications

Use of radiation in medical applications is a complex issue



- Specific conditions especially for patients, carers and volunteers in medical research
- Rapid changes in technology and methods

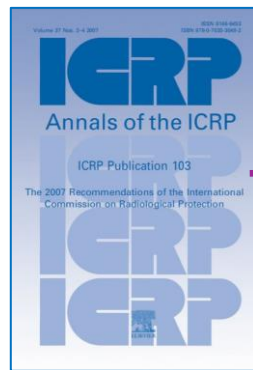
- Other aspects also relevant



Medical applications

Strengthen the link between theory and practise

Theoretical framework



Practise



Practical implementation
e.g. ICRP 129

ICRP
135

ICRP
140

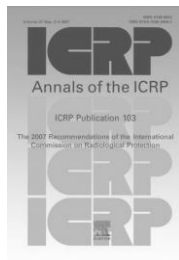
ICRP
149

- SSM believes that an advanced guidance on ICRP:s framework applied in medical applications is needed



Medical applications

The theoretical framework



The practise



- Medical applications need to be fully integrated in the system of radiological protection in order to stay relevant.
- The revision process must involve the appropriate competences



Nuclear and radiological emergencies

- ➔ SSM suggests developing the guidance on exposure situations and the transition between them in connection with a nuclear or radiological emergency
- ➔ SSM suggests developing the guidance on the use of reference levels in the early and intermediate phases of a nuclear or radiological emergency



Nuclear and radiological emergencies

- ➔ SSM suggests developing the guidance on informed consent for responders in the early and intermediate phases of a nuclear or radiological emergency
- ➔ SSM suggests developing the guidance on protection of responders undertaking recovery and restoration operations in the long-term phase of a nuclear or radiological emergency



Potential exposure of workers

- ➔ Challenges in developing new radiation safety regulations for nuclear power reactors
 - to combine requirements on protection of workers from potential and normal exposure with requirements on nuclear safety
 - to establish criteria of acceptability for potential exposure of workers in design requirements
 - to apply the concept of risk constraints in addition to dose constraints in the optimization of protection and safety



Potential exposure of workers

- SSM believes that
 - there is a need for further guidance on the application on risk constraints for workers in planned exposure situations
 - the guidance provided for in ICRP Publication 64 and 76 is 25 years old and needs review

- SSM supports an approach to review the optimization principle regarding its duality
 - level of exposure and likelihood of event causing exposure



Environmental Protection

- Reference organisms (RAPs) are not enough to demonstrate protection of ecosystem services
- Develop indicators for protection of ecosystem services
- SSM agrees with ICRP's intention to explore possibilities to include environmental protection in the context of sustainable development into future ICRP Recommendations



Protection of domestic animals

- ➔ Concerning protection of domestic animals several topics need to be investigated further:
 - Scientific basis, e.g. data on animal sensitivity to ionizing radiation linked to tissue reactions and stochastic effects
 - Practical aspects, in particular with regard to implementation in regulation
 - Ethical aspects



Conclusions

- Current ICRP system is in most cases fit for purpose
- Some gaps between theory and practice need closing, and there is a need for clarifications and possibly also adjustments in specific areas
- Important to
 - take action in order for the system to remain relevant in the future
 - take into account experiences from the organisations applying the system, in particular the authorities



Thank you for your attention!