European Commission

EURATOM Directives:

Status, challenges and future perspectives in Nuclear Safety and Radiation Protection

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Euratom competences

Nuclear **safety**

Waste management

Radiation protection

Emergency preparedness and response

Nuclear **safeguards**

Fuel supply policy

International relations

Insurance ***and*** ***third-party*** ***liability***

Strengthening the legal framework

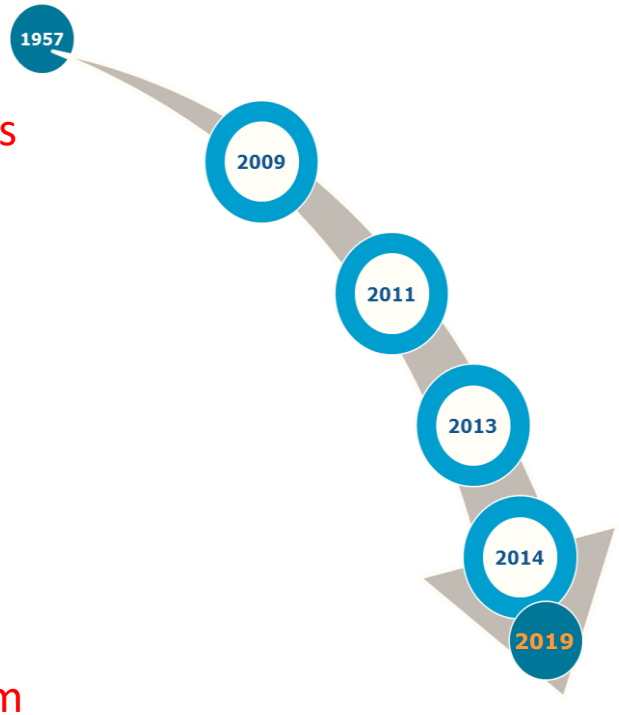
Directive 2009/71/Euratom
Nuclear Safety of nuclear installations

Directive 2011/70/Euratom
Spent Fuel and Waste Management

Directive 2013/51/Euratom
Euratom Drinking Water Directive

Directive 2013/59/Euratom
Basic Safety Standards

Directive 2014/87/Euratom
amending Directive 2009/71/Euratom



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Nuclear Safety

Energy

Nuclear Safety

Follow up to Fukushima nuclear accident

European Council 24-25 March 2011

2 mandates

Risk and safety assessments of nuclear power plants ("stress tests")

Review of the legal and regulatory framework for the safety of nuclear installations – amended Directive

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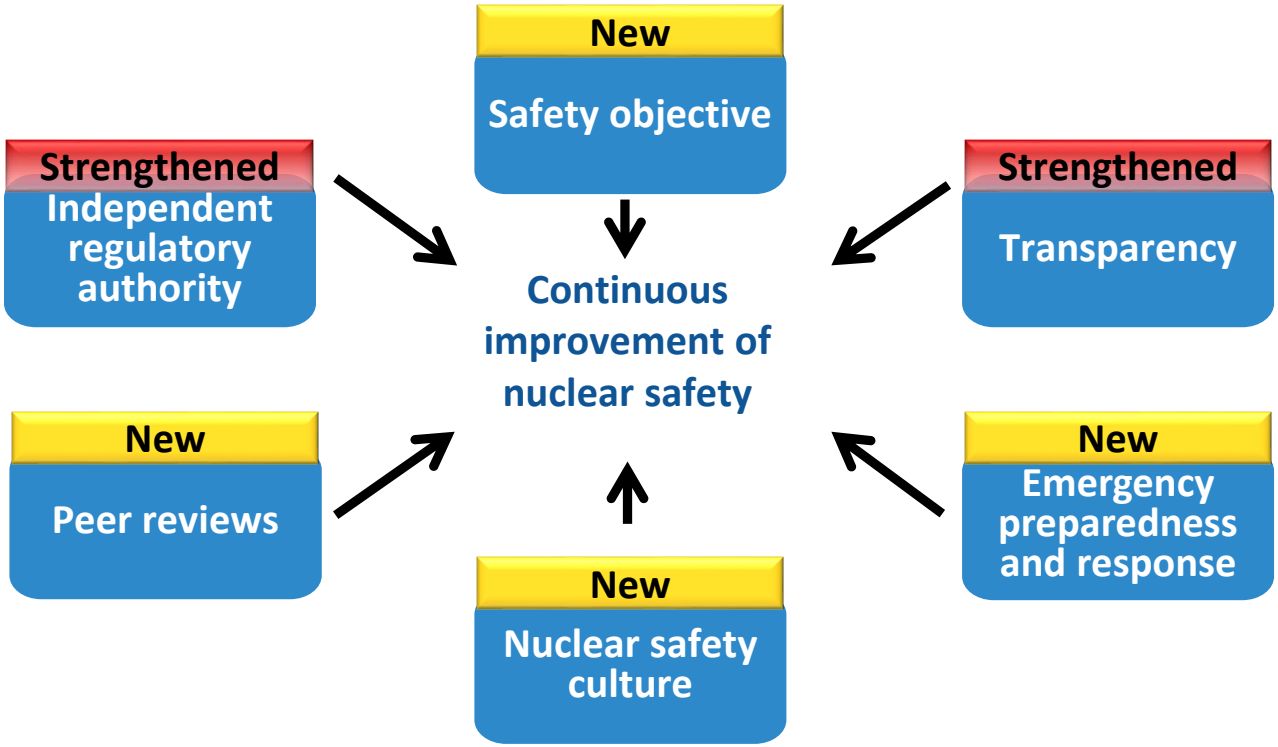
EU Stress Tests in 2012

ENSREG
European Nuclear Safety Regulators Group

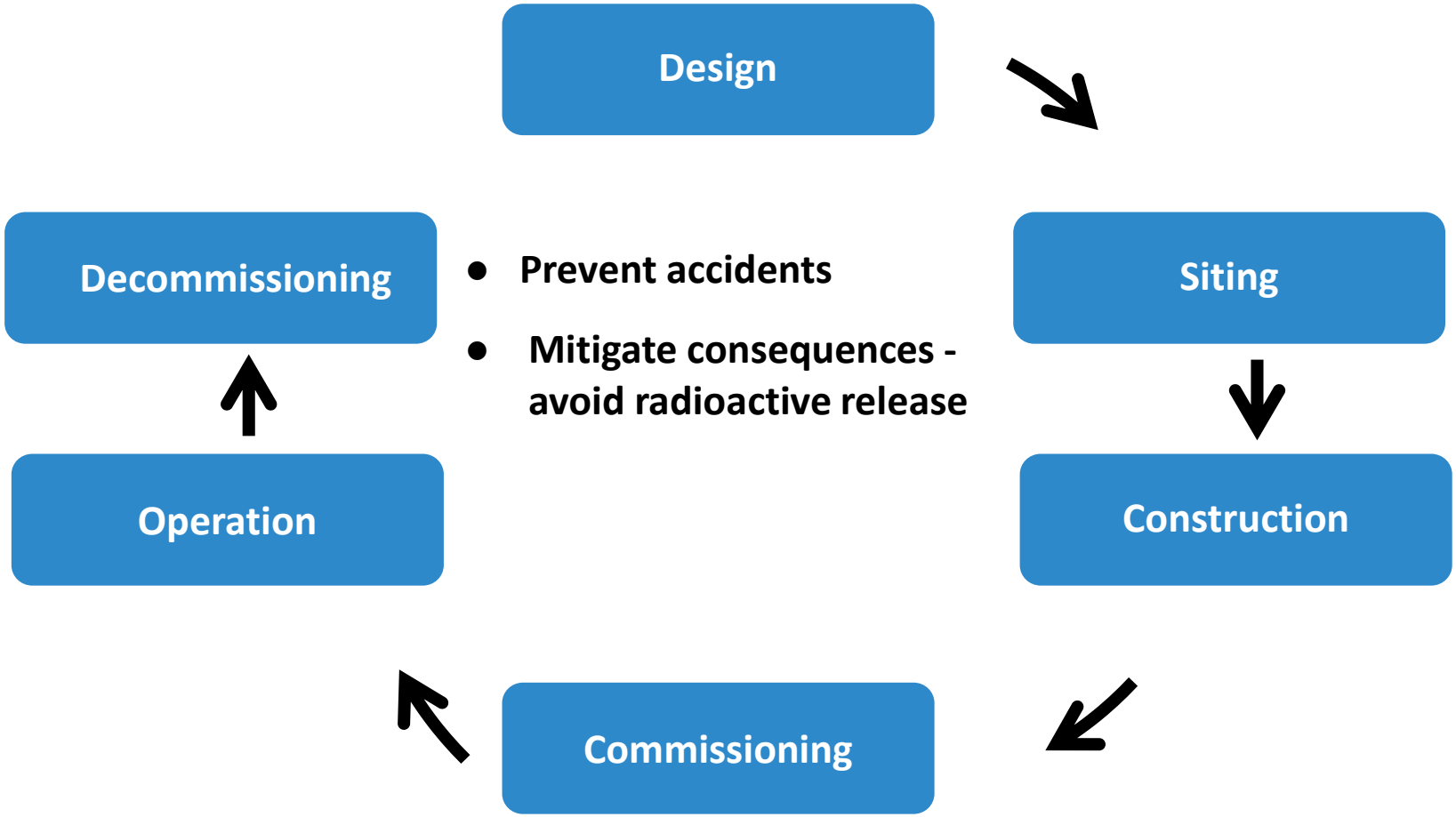
All 14 EU Member States that operate nuclear power plants, plus Lithuania, Switzerland, Ukraine. Additionally, Taiwan (2013), Armenia (2016) and Belarus (2018).

Planned in Turkey and Iran.

Amended 2014 Nuclear Safety Directive

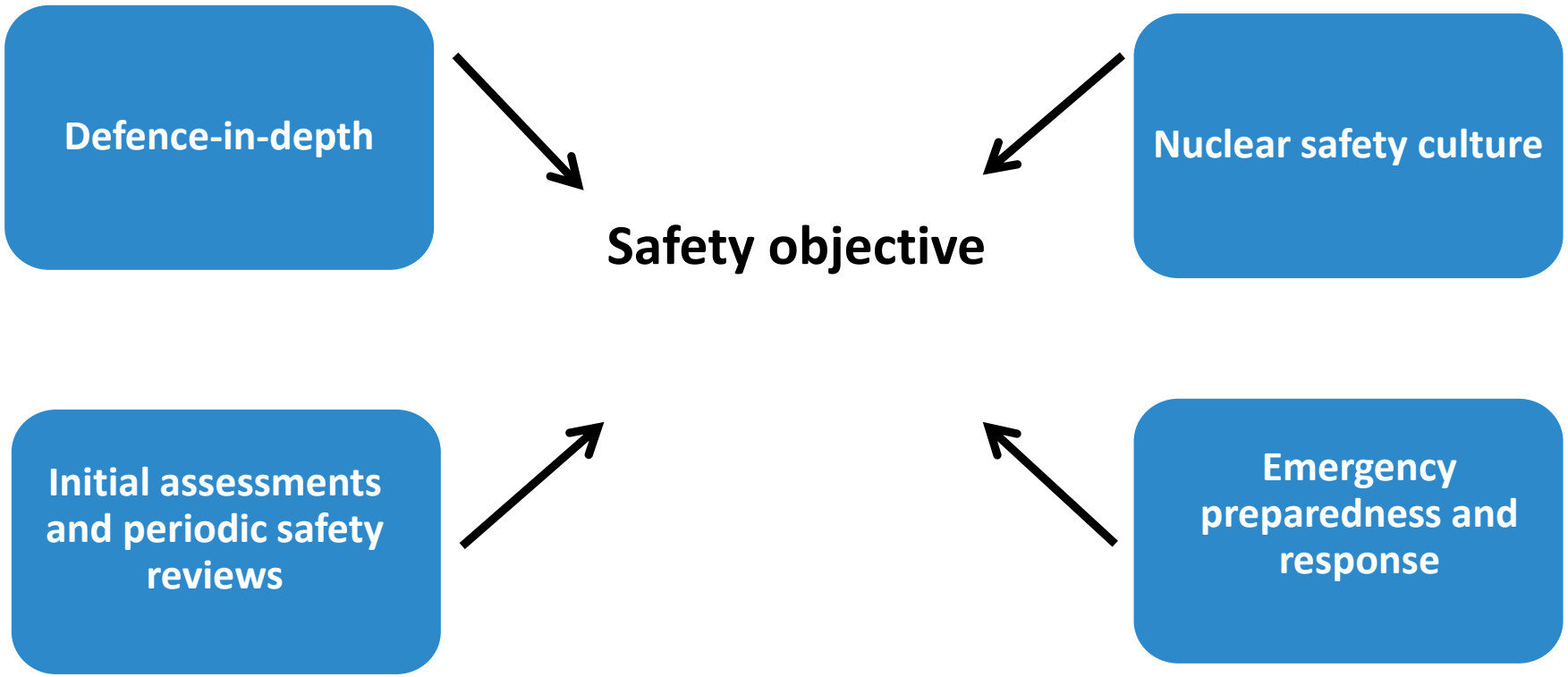


Nuclear Safety objective



Main measures to achieve the safety objective

as provided for in the Directive



European system of Topical Peer Reviews

- Introduced by amended Nuclear Safety Directive → every 6 years (and following severe accident)
- Inspired by EU stress tests
- 1st Topical Peer Review in 2017/18 - Ageing management of nuclear reactors - final report published October 2018, National Action Plans to follow

http://www.ensreg.eu/sites/default/files/attachments/hlg_p2018-37_160_1st_topical_peer_review_report_2.pdf

TPR 2018 findings, challenges

- Ageing management programmes in place for all nuclear power plants, based on IAEA safety standards and WENRA reference levels, although some differences of national approach.
- Ageing management of research reactors to be brought in line with that for NPPs.
- Challenges remain on means to evaluate the effectiveness of Ageing Management Programmes.
- Use of international Peer Review Services is a good practice.
- National Action Plans to be prepared by September 2019.

Radiation Protection

Basic Safety Standards Euratom Treaty (1957)

Chapter on health and safety

- Establish uniform basic safety standards for the protection of the health of workers and the general public against dangers arising from ionising radiations
  - ✓ … and ensure that they are applied.

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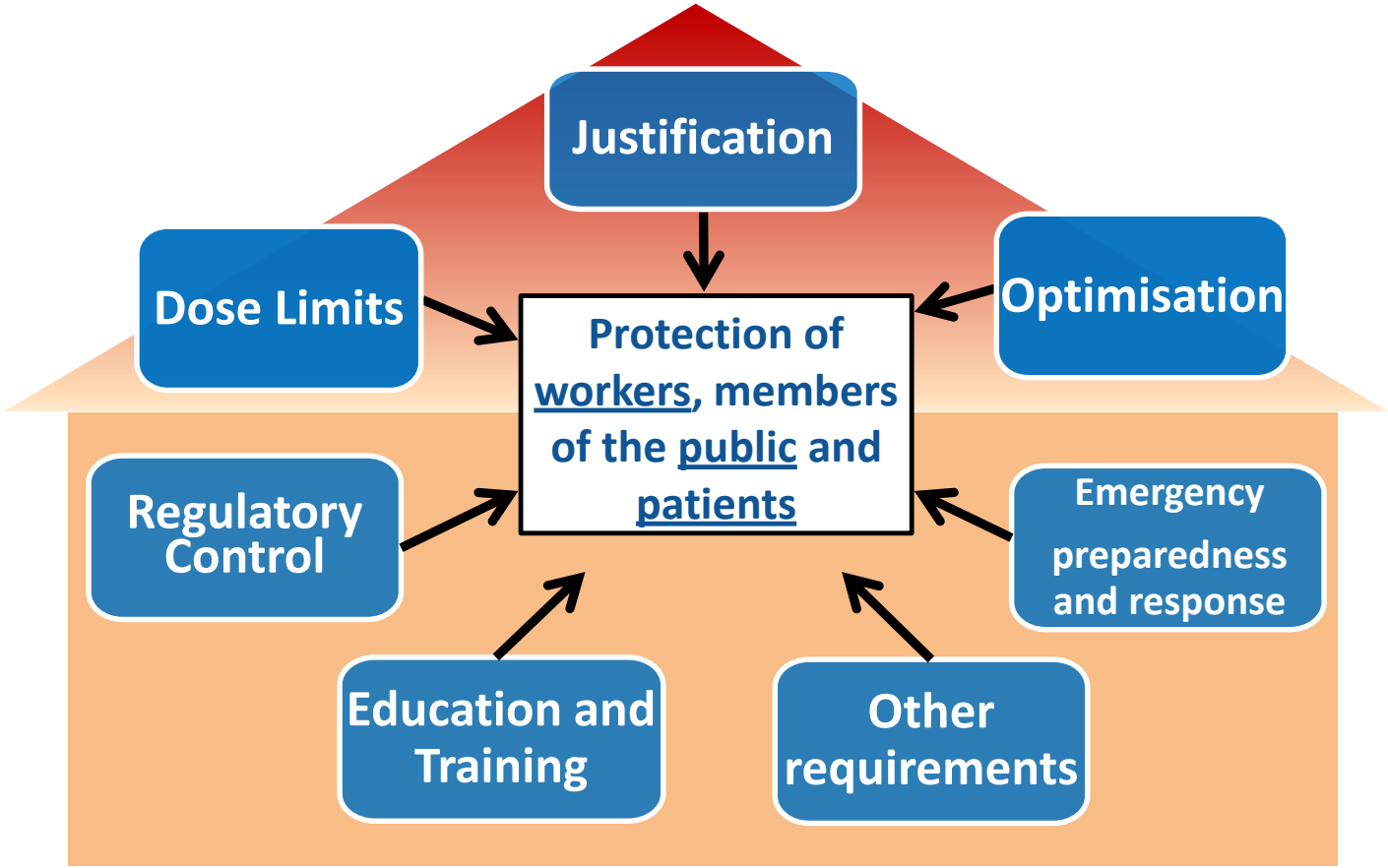
Radiation Protection

Basic Safety Standards Directive (2013)



Motivation and Objective of the 2013 Revision

Modernisation

- Take account of latest scientific findings (e.g. ICRP 2007), technological development as well as operational experience since 1996
- Cover all radiation sources – including natural radiation
- Cover all exposure situations – planned, existing, emergency
- Integrate protection of workers, members of the public, patients and the environment
- Harmonise, to the extent possible, numerical values with international standards

Consolidation and streamlining– *repealing :*

- ✓ *Basic Safety Standards, Directive 96/29/Euratom*
- ✓ *Medical Exposures, Directive 97/43/Euratom*
- ✓ *Public Information, Directive 89/618/Euratom*
- ✓ *Outside Workers, Directive 90/641/Euratom*
- ✓ *Control of high-activity sealed radioactive sources and orphan sources, Directive 2003/122/Euratom*
- ✓ *Radon, Commission Recommendation 90/143/Euratom*

Council Directive 2013/59/Euratom provides

- ✓ **Better protection of**
  - ✓ workers,
  - ✓ medical staff,
  - ✓ emergency workers and
  - ✓ workers in workplaces with natural radiation sources (indoor radon; activities processing naturally occurring radioactive material (NORM));
- ✓ **Better protection of the public, in particular from:**
  - ✓ radon in dwellings,
  - ✓ exposure from NORM activities and building materials
  - ✓ deliberate exposure for non-medical purposes;
- ✓ **Better protection of patients, in particular with regard to the avoidance of incidents and accidents in radio diagnosis and radiotherapy;**
- ✓ **Strengthened requirements on emergency preparedness and response, especially with a view to the lessons learned from the Fukushima accident.**

Medical applications - radiology challenges

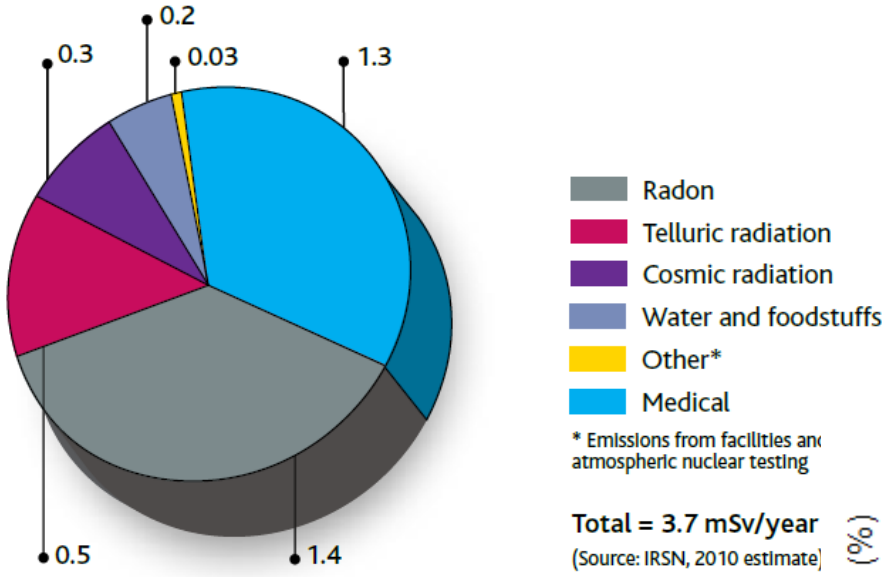
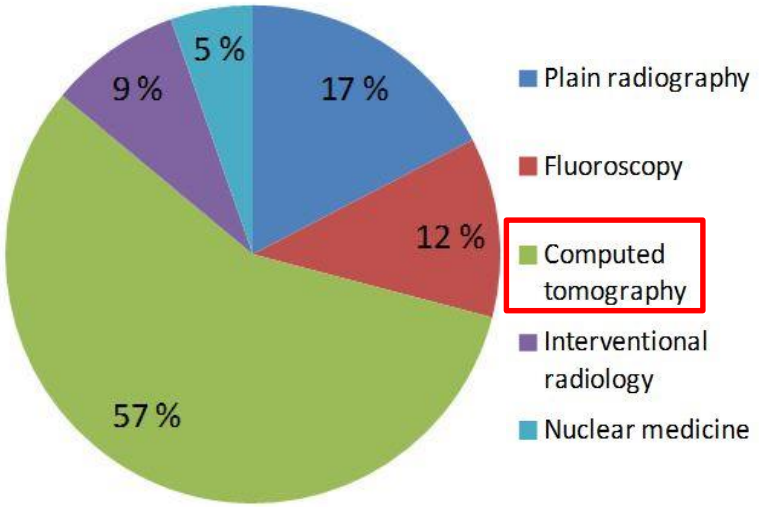
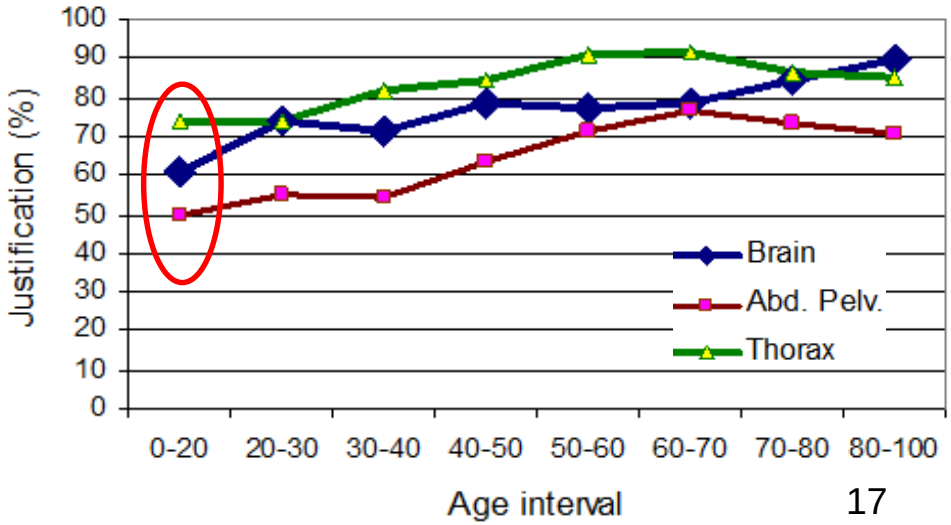


Figure VIII.1 - Average exposure to ionizing radiation of the population in Franc



Contribution to medical exposure in the EU
(RP 180, EC 2015)

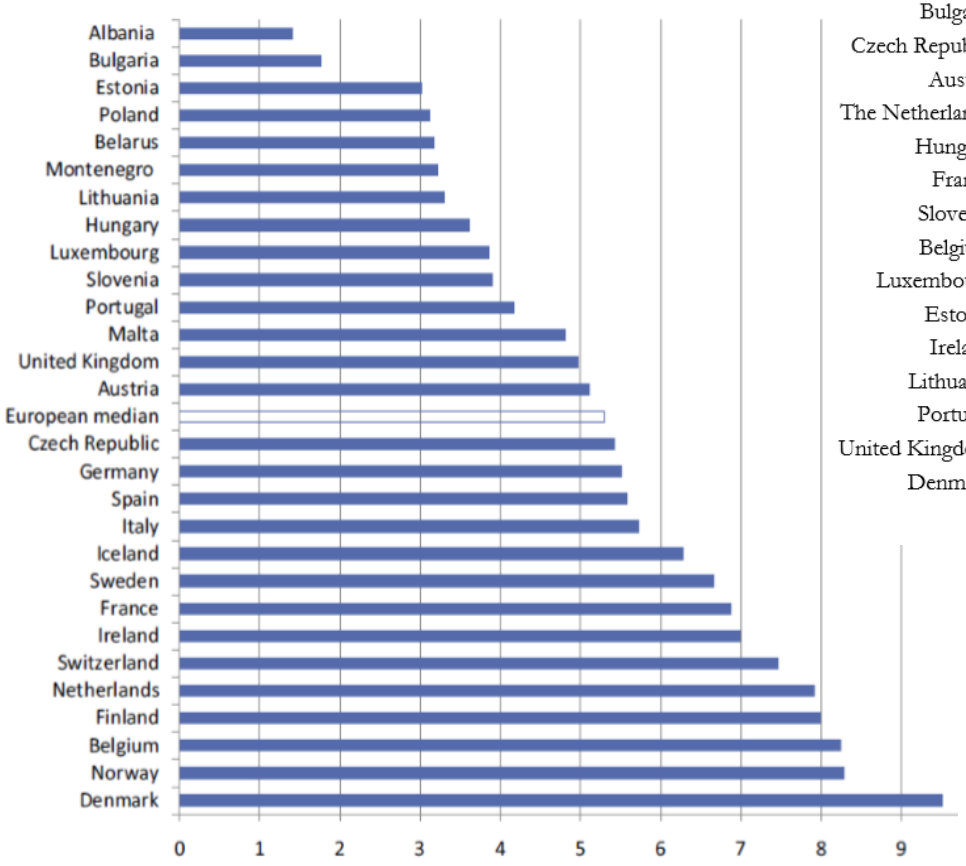


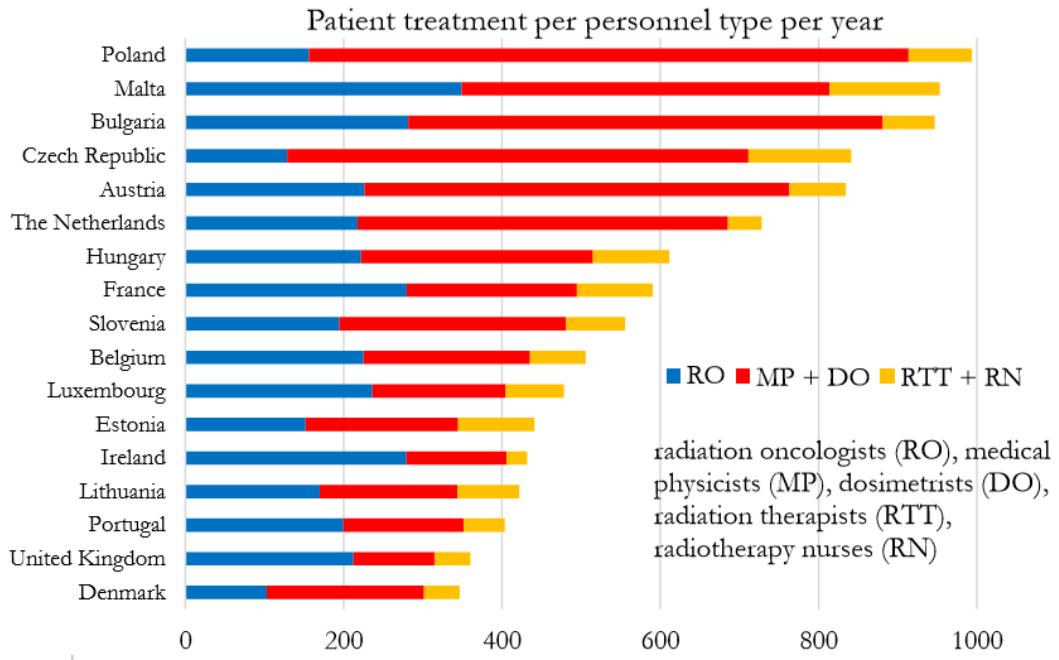
W. Leitz, A. Almén, S. Richter, A study on justification of CT examinations in Sweden

- BSS 2013/59/Euratom
- Commission COM/2010/0423
- Council Conclusions 2015 (LU)
- Implementation support

Medical applications – radiotherapy challenges

Radiotherapy machines per million inhabitants





LE FIGARO.fr

À Épinal, 5 500 personnes ont été victimes de surirradiation

Par M.-C. T. | Publié le 22/04/2008 à 22:55

BSS medical – main changes

Justification

- Transparency of justification for types of practice
- Equipment information – link with EU Medical Devices law
- Asymptomatic – guidelines, documenting, info to the 'client'

Optimization

- DRLs – mandatory, regular review, applicable to IR

Responsibilities / Procedures

- Stronger MPE involvement in IR, CT, paediatric, screening
- Information to patients on benefits and risks

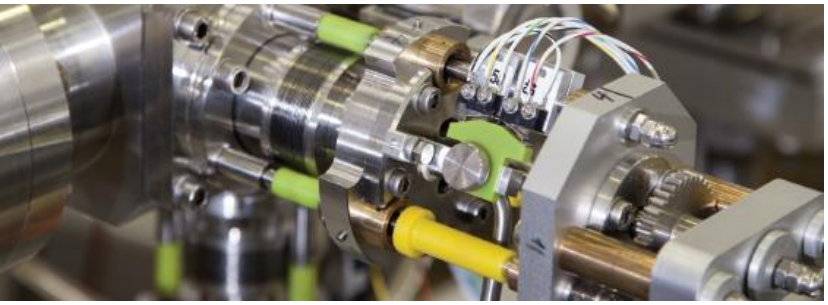
Equipment

- Dose-related information, transfer to examination record

Accidental and unintended exposures

- Risk assessments, recording, reporting, dissemination

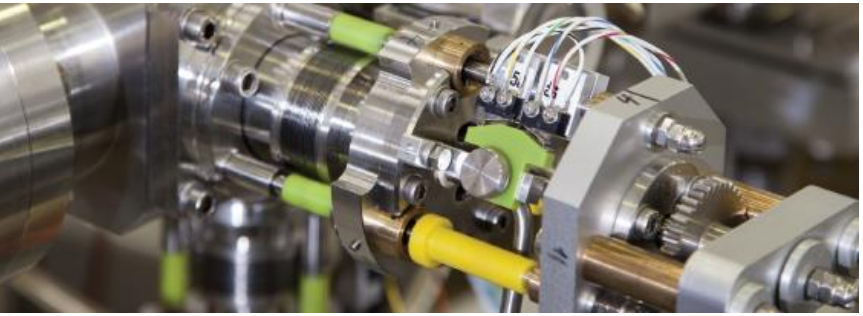
SAMIRA = Strategic Agenda for Medical, Industrial and Research Applications



Objectives: *systematically* ***identify issues*** *relating to the use of nuclear and radiation technology outside the nuclear energy sector and* ***propose actions*** *to address them*

Cover: *security of* ***supply of radioisotopes****, radiation protection and safety, research and innovation*

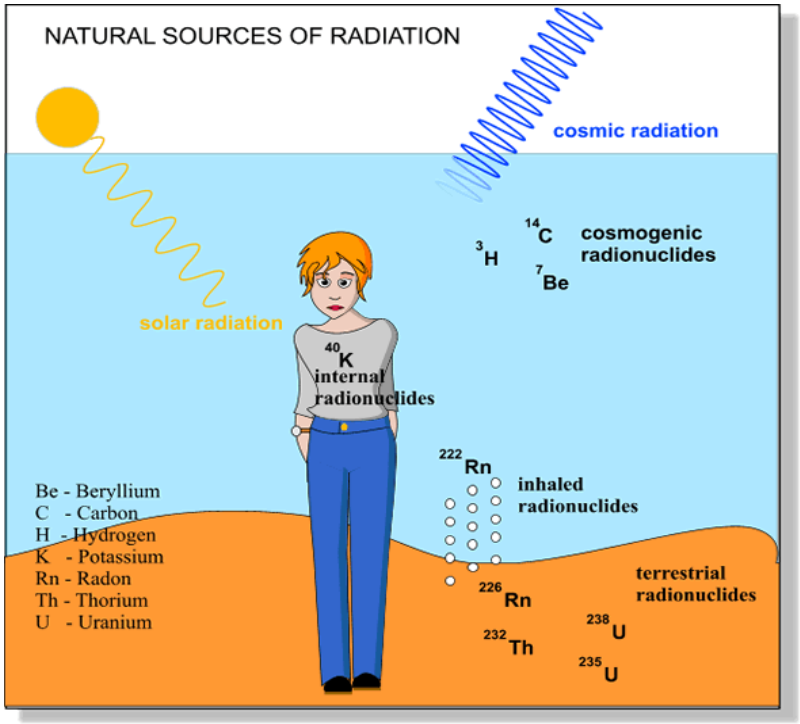
Towards SAMIRA Action Plan



- **Where action is most needed**
- **EU could add real value to Member State actions**
  - Concentrated largely in the medical field
- **Secure supply of radioisotopes for Europe**
- **Improve radiation protection and safety for patients and medical staff**
- **Facilitate innovation in the medical practice**
- **Strengthen human resources and facilitate capacity building**

Protection from natural radiation sources

- Radon in dwellings and workplaces
  - ✓ *Establishment of a national reference level for indoor radon concentration in workplaces ≤ 300 Bq/m³*
- Practices involving naturally-occurring radioactive material (NORM)
  - ✓ *If worker doses liable to exceed 1 mSv /year – relevant occupational exposure requirements apply*
- Existing exposure situations involving naturally-occurring radioactive material
- Gamma radiation from building material
  - ✓ *Reference level of 1 mSv/year from indoor external exposure to gamma radiation (above outdoor external exposure)*
- Cosmic rays (air crew & space crew)



National radon action plan

- Establishment of a national radon action plan addressing long term risks from radon exposures (Article 103)
  - ✓ in dwellings, buildings with public access and workplaces
  - ✓ from any source of radon ingress – soil, building material, water

- National action plan needs to take into account the issues set out in Annex XVIII of the BSS Directive

- Ensure appropriate measures to prevent radon entry into new buildings, e.g. through specific requirements in building codes

- Identify areas with a significant number of buildings expected to exceed the national reference level

Emergency preparedness and Response

The BSS Directive

Provisions of Basic Safety Standards Directive

- Assessment of emergency situations
- Management emergency exposures,
- Emergency response plans, protective measures, notification, emergency workers
- Cooperation across Member States
- Information to the public
- Transition from emergency to existing exposure situation

Council Conclusions on EP&R (Dec 2015)

- *Coherent protective measures along adjacent national borders,*
- *MS's cooperate closely on EP&R,*
- *MS's intensify efforts for joint training and emergency exercises,*
- *Better cross-border coordination of protective measures*

Emergency Preparedness and Response

The Amended Nuclear Safety Directive

- **Includes requirements on on-site EP&R, periodically reviewed, exercises, external assistance**
- **Establishes requirements for organisational structure, coordination between parties, and ensuring consistency and continuity with the BSS provisions (Art 8d)**
- **Enhances the requirements on transparency on nuclear safety matters by prompt information to the public (Art 8)**

Emergency Preparedness & Response

Commission role

- **Information exchange**
  - ✓ **inform Member States (ECURIE)**
  - ✓ **EUropean Radiological Data Exchange Platform (EURDEP)**
- **Protection:**

  activate emergency measures (Food/feed Regulations)
- **Response:**

  Contribute to EU-level response (civil protection, medical…)

The Euratom perspective

- Euratom provides a comprehensive framework to ensure a high level of radiation protection and nuclear safety across the EU
- NSD and BSS Directives – significant changes, strengthened legal framework
- Conformity checks of Member States' legislation and application are underway – will identify areas where joint actions are needed
- Science based provisions – research outcomes feed into the development of the legal framework

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THANK YOU

https://ec.europa.eu/energy/en/home

Energy