Requirements on natural radiation sources in the new Basic Safety Standards Directive

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Euratom legislation
Legal Basis:
The Euratom Treaty (1957)

**Article 2:** In order to perform its tasks, the Community shall ...

establish uniform standards to protect the health of workers and of the general public and ensure that they are applied; [...]

**Article 30:** Basic standards shall be laid down within the Community for the protection of the health of workers and the general public against dangers arising from ionising radiations. [...] 

**Article 31:** The basic standards shall be worked out by the Commission after it has obtained the opinion of a group of persons appointed by the Scientific and Technical Committee from among scientific experts, and in particular public health experts, in the Member States ...
Set of secondary legislation completed and modernised

Radiation protection

New Basic Safety Standards

Drinking water quality

Food and feed
- Council Regulation laying down maximum permitted levels of radioactive contamination of food and feed following a nuclear accident or any other case of radiological emergency – currently in consultation

Information exchange in case of a nuclear accident or radiological emergency
- ECURIE (European Community Urgent Radiological Information Exchange)
- EURDEP (EUropean Radiological Data Exchange Platform)

...
Euratom Basic Safety Standards Directive
Main objective of the Basic Safety Standards

Ensure the highest possible protection of workers, members of the public and patients against the dangers arising from exposure to ionising radiation


Modernisation of European Radiation Protection Legislation

- Takes account of latest scientific findings, technological development, operational experience
- Covers all radiation sources – including natural radiation
- Covers all exposure situations – planned, existing, emergency
- Integrates protection of workers, members of the public, and patients
- Harmonises numerical values with international standards

Consolidation of European Radiation Protection Legislation

- 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
Natural radiation sources
ICRP Radiation protection philosophy

Following the newly introduced ICRP philosophy, the new BSS

- Applies to all exposure situations
  - any planned, existing, or emergency exposure situation which involve a risks from exposure to ionising radiation that cannot be disregarded from a radiation protection point of view

- Applies to all relevant radiation sources
  - including natural radiation (radon, cosmic rays, natural occurring) – no distinction made between artificial "man-made" radiation and natural radiation

Major challenge
Coherent application of Basic Safety Standards to natural radiation sources
Protection from natural radiation sources

- Radon in dwellings and workplaces
- Practices involving naturally-occurring radioactive material (NORM)
  - NORM industries subject to regulatory control
  - Authorisation and monitoring of radioactive discharges
  - Occupational exposure requirements
- Existing exposure situations involving naturally-occurring radioactive material
- Gamma radiation from building material
- Cosmic rays (air crew & space crew)
Regulatory control of practices involving NORM

- Identification of practices involving naturally occurring radioactive material
  - Leading to exposure of workers or members of the public which cannot be disregarded from a radiation protection point of view (Article 23)
  - Indicative list of industrial sectors (Annex VI)

- Graded approach to regulatory control (Articles 24 – 30)
  - Notification
  - Exemption from notification (1 kBq/kg for natural radionuclides from the $^{238}$U-series and $^{232}$Th-Series)
  - Authorisation (registration or licensing) – including discharge authorisations (if applicable)
  - Release from regulatory control

- Arrangements in workplaces (Article 35)
  - If worker doses liable to exceed 1 mSv/year – relevant occupational exposure requirements apply
Building materials

- Article 75 defines a reference level of 1 mSv/year from indoor external exposure to gamma radiation (above outdoor external exposure)

- Identification of building materials of concern
  - Indicative list of building materials (Annex XIII)
    - Natural materials
    - Materials incorporating residues from NORM industries

- Before placing on the market of identified building materials
  - Determine activity concentration of $^{226}\text{Ra}$, $^{232}\text{Th}$, $^{40}\text{K}$
  - Inform competent authority on measurement results and on corresponding activity concentration index

- If type of building material liable to exceed reference level
  - Member State to decide on appropriate measures – e.g. specific requirements in building codes or restrictions on use of these materials
Existing exposure situations

- Programmes on existing exposure situations (Article 100)
  - Identify and evaluate existing exposure situations
  - Indicative list of existing exposure situations given in Annex XVII
    - Contamination / residues from past activities (including NORM activities)
    - Natural radiation sources
    - (Non-food) commodities incorporating naturally-occurring radionuclides
  - Evidence of exposures which cannot be disregarded from a radiation protection point of view
    - subject to relevant requirements for planned exposure situations, if legal responsibility can be assigned

- Establishment and implementation of strategies (Articles 101 & 102)
  - Appropriate management of the situation
    - Implementation of remedial and protective measures
    - Coordination between relevant parties
    - Optimisation
    - Appropriate Stakeholder involvement
Air crew and space crew

Air crew

- Arrangements in workplaces (Article 35.3)
  - If worker doses liable to exceed 1 mSv/year – relevant occupational exposure requirements apply, in particular
    - Assessment of exposure of crew
    - Optimisation through organisation of working schedules
    - Information on health risks
    - Special protection of pregnant air crew

Space crew

- Specially authorised exposures (Article 52.3)
  - If doses above the dose limits
Transposition and implementation
Transposition of the new BSS

Article 106

Transposition

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by 6 February 2018.

28 Member States of the European Union have four years to transpose this comprehensive Directive into national legislation

✓ 99 definitions, 109 articles and 19 annexes
Monitoring and supporting

- Commission strategy to monitor and support the transposition and implementation of the Directive
  - Now: Experience exchange between Member States
    - Evaluation of Member States' strategies and plans
    - Detection of issues, exchange of experiences/resolutions, identification of good practices
    - Series of workshops (general, topical)
  - Later: Assessing compliance with the BSS Directive
    - Analysis of Member States' national transposition measures
Résumé

- European radiation protection legislation consolidated and modernised
  - Based on latest scientific knowledge
  - Covers all radiation sources – including natural radiation sources – radon, cosmic rays, natural occurring
  - Covers all exposure situations – planned, existing, emergency
  - Integrates protection of workers, members of the public, patients and the environment
  - Definitions and requirements more consistent and coherent
  - Numerical values harmonised with international standards

- Member States to transpose the BSS (Directive 2013/59 Euratom) into national legislation by 6 February 2018
- Commission activities to monitor and support the transposition and implementation of the Directive
Thank you for your attention