


**How to Treat with the New German
Radiation Protection Act?**


Florence-Nathalie Sentuc, Uwe Stoll, GRS
March 2018
Regulatory Information Conference 2018



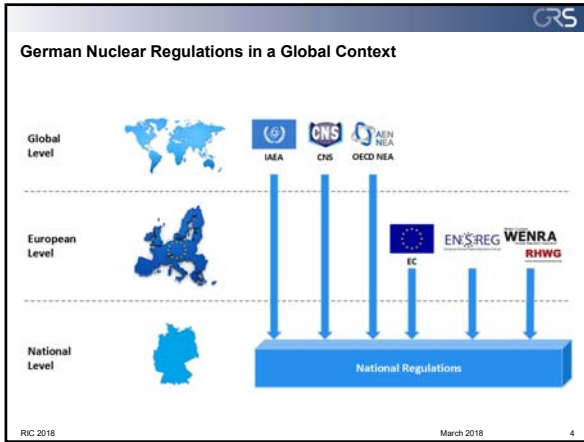
Content

- Introduction to the German regulatory system
- Doses in Germany
- Background and objective of the new German Radiation Protection Act
- System of radiation protection
- Selected modifications
- Summary and outlook

RIC 2018 March 2018 2



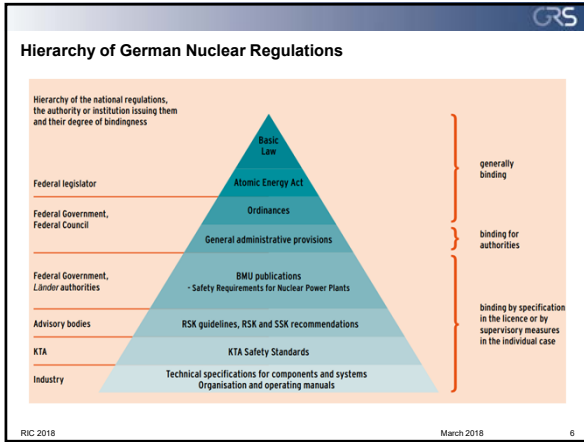
**Introduction to the German Regulatory
System**

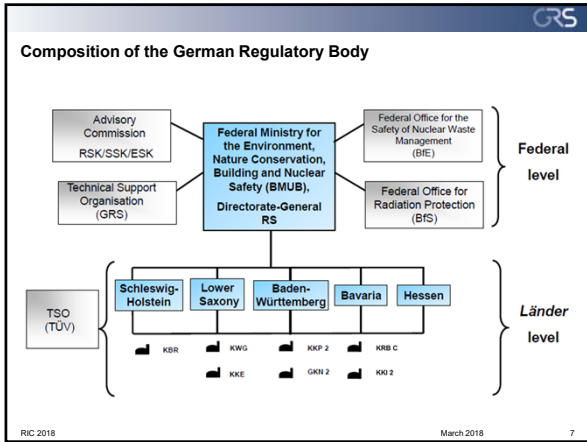


German Constitution

- Germany is a Federation (Bund) consisting of 16 states (Länder / Bundesländer)
- German Basic Law defines on which topic whether the federal republic or the states are responsible
- Execution of federal laws in principle within states responsibilities
- Regulatory Body composed of Federal Government authorities and State Government authorities

RIC 2018 March 2018 5





GRS

German Nuclear Regulations: Responsibilities

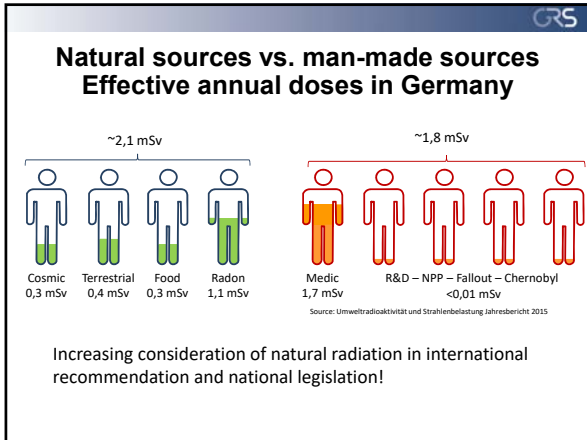
Regulatory function	Federal Government authorities	States ("Länder") government authorities
Establishment of national safety requirements and regulations	X	participation
Licensing and Inspection	oversight	X
Enforcement of applicable regulations and of the terms of licenses	oversight	X
Regulatory safety research	X	
Monitoring of events, operating experience and implementation	X	X
Radiation protection, environmental monitoring	X	X
Emergency preparedness	X	X
International co-operation	X	(participation)

x = responsible for implementation

RIC 2018 March 2018 8

GRS

Doses in Germany



GRS

Background and Objective of the German Radiation Protection Act

GRS

Background: Announcement of European Basic Safety Standards (BSS) in 2013/2014

„EU Basic Standards“

- Directive 2013/59/Euratom
- Consolidation of several guidelines in one document
- Fundamentals and principles of the general radiation protection regime essentially unchanged
- Consideration of ICRP 103 and other recommendations

- **Largely consistent with the IAEA Basic Safety Standards**
 - Parallel development in close co-operation
 - Especially: numerical values harmonised
 - But: different degree of detail and legal status

➤ Implementation of EU BSS in national law by 6 February 2018

RIC 2018 March 2018 12

GRS

Objective: Amendment and Separate Formal and Legal Basis for Radiation Protection

Implementation of the EU Basis Standards

- System of radiation protection acc. to ICRP 103
- New areas of regulation

Modernisation of radiation protection law

- Execution-friendly design
- Adaptation of the emergency preparedness concept on the basis of lessons learned from Fukushima

Consolidation of applicable laws and ordinances

- Parts of the Atomic Energy Act
- Precautionary Radiation Protection Act
- Radiation Protection Ordinance
- X-Ray Ordinance

German Radiation Protection Act

+

Ordinances

RIC 2018 March 2018 13

GRS

System of Radiation Protection

GRS

Basis: System of Radiation Protection

~~Work Activities and Practices~~

Activities (§ 4)

Rad. protection principles

- Justification (§ 6)
- Optimisation (§ 8)
- Dose limitation (§ 9)

Exposure criteria

- Occupational exposure
- Medical exposure
- Exposure of the population

Early detection

Exposure situations

- Planned exposure situations (Part 2)
- Existing exposure situations (Part 4)
- Emergency exposure situations (Part3)

Radon

RIC 2018 March 2018 15

GRS

Selected Modifications

GRS

Changes in Connection with the Official prior Checking of Activities

- **Notification procedure**
 - Operation of X-ray devices (nearly unchanged)
 - NORM workplaces (in future from 1 mSv per calendar year)
 - **New:** Employment of flight personnel and astronauts
 - **New:** NORM residues remaining subject to supervision
 - ...
- Other activities involving NORM residues have to be **registered**

RIC 2018 March 2018 17


GRS

Changes in Connection with Occupational Radiation Exposure

- The **proven system** with radiation protection supervisor (§ 69) and radiation protection officer (§ 70, necessary qualification) **is retained**
- **Radiation Protection Responsible** remains responsible for "all" duties
- Radiation Protection Officer/Expert (RPO) for the duties (and powers) within the scope of the appointment
- **In future, a RPO will be required in extra areas:**
 - Notification of activities involving NORM (work so far)
 - Transport of radioactive materials
 - Operation of air- and spacecraft

Sector	Percentage of activities involving NORM (work so far)
Medicine	0.4
Industry	0.6
Nuclear	0.8
Flying Staff	0.8
Water works, Commercial caves, Bismuth (Radon)	0.9

RIC 2018 Source: www.bfz.de



Changes in Connection with Limit Values

Occupationally exposed individuals (§ 78):

(2) Lowered limit for the dose to the **eye's lens**:
20 mSv/a (according to ICRP recommendation)


Individuals of the population (§ 80):

(1),(2) Limit values apply to the **total sum of all activities** with licence/notification

(4) **Authority co-ordinates** overall observance
 (so far only for discharges)


Limit values otherwise essentially unchanged!

RIC 2018 March 2018 19



New Regulations: Protection against Radon in Interior Spaces (1)


- **Reference values for radon**
 - In workplaces: **300 Bq/m³**
 - In habitable rooms: **300 Bq/m³**
- **Definition of areas (§ 121)**
 - With a considerable number of expected exceeded limit values



Concentration of radon near the ground in kBq/m³



- > 100
- 60 - 100
- 30 - 60
- < 30

RIC 2018 March 2018 20



New Regulations: Protection against Radon in Interior Spaces (2)



- **Radon action plan (§ 122, BMUB)**
 - Inhabitable rooms and workplaces
 - Information, explanation of the strategy
 - Suggestion of technical measures
 - Locally adapted strategy and measurements performed by the Länder
- **Newly constructed buildings (§ 123)**
 - Measures that prevent or hamper radon entry
 - Protection against moisture sufficient outside the defined areas

RIC 2018 March 2018 21

Changes in Emergency Preparedness

- Comprehensive juridification necessary, implementation largely in federal law intended
- **Emergency management system** (prevention and reaction)
 - Contingency plans of federation and Länder (§§ 98 - 101)
 - Integral picture of radiological situation
 - Intermeshing of radiation protection law and other areas (disaster control, transport, waste, food monitoring,...)
- **Protection of the deployment forces**
 - Person carrying out a **defined task** in an emergency or a different hazard situation and who may be exposed when doing so
 - Instruction, training, further qualification (§ 113 ff.)
 - Definition of reference values

RIC 2018 March 2018 22

Radiation Protection in Emergency Exposure Situations

Major changes (selection):

- Consistent structuring of prevention in contingency plans
 - Based on **reference scenarios**
- Introduction of **optimised protection strategies**
 - Orientation on **reference value concept**
 - Aim: less than 100 mSv effective dose in 1st year
 - Combination of short- and long-term measures, constant adaptation to the situation
- Establishment of a **federal radiological situation centre** (§ 106)
 - Under the aegis of the BMUB
 - Preparation of an overview of the radiological situation according to § 108
 - Support by BfS, BfE, GRS and BBK

RIC 2018 March 2018 23

Summary and Conclusion

Summary and Conclusion

- German Radiation Protection Act serves for the implementation of the EU Basic Standards
 - Structuring based on exposure situations
 - Definition of radiation protection principles (strengthening justification)
 - Licensing and notification procedure, regulatory supervision
 - Regulations concerning radon, building materials, contaminated areas
 - Determination of limit values and reference levels
- Pending: **issuing of ordinances**
 - Material protective provisions
 - Dose determination
 - Events in connection with medial application
 - Clearance
 - ... and many more details
