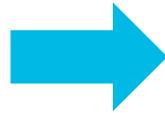
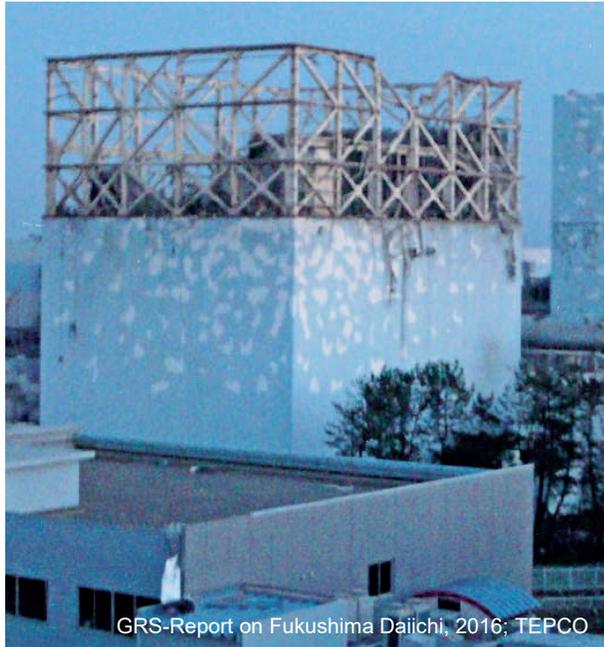


*F. Meinerzhagen - M. Sogalla - A. Artmann - S. Holbein - E. Mühr-Ebert - I. Petermann - T. Stahl*

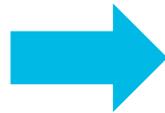
# **Specification and Continuation of the Provisions of the Radiation Protection Act Relating to Emergency Protection in Subordinate Regulations**

# Introduction and motivation

## Reactor accident in Japan



Worldwide evaluation and reassessment in the field of EPR



German phase-out of commercial production of electricity from nuclear energy



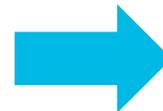
# Introduction and motivation

Worldwide evaluation and reassessment in the field of EPR



- Extension of planning to accidents with effects of INES-7 events
- Waste management concepts for waste contaminated by an emergency
- Harmonisation of protective measures across national borders

German phase-out of commercial production of electricity from nuclear energy



- Competences in *Länder*?
- Equipment and know-how of Kerntechnische Hilfsdienst GmbH?

# Introduction and motivation



Act on the Reorganisation of the Law on Protection  
against the Harmful Effects of Ionising Radiation  
→ Radiation Protection Act (StrlSchG)

# Introduction and outline

- Introduction and motivation
- Emergency management system in Germany
  - Federal Radiological Situation Centre (RLZ)
  - Emergency plans
- The General Federal Emergency Plan
- Special Federal Emergency Plan „Waste and Sewage“
- Conclusion

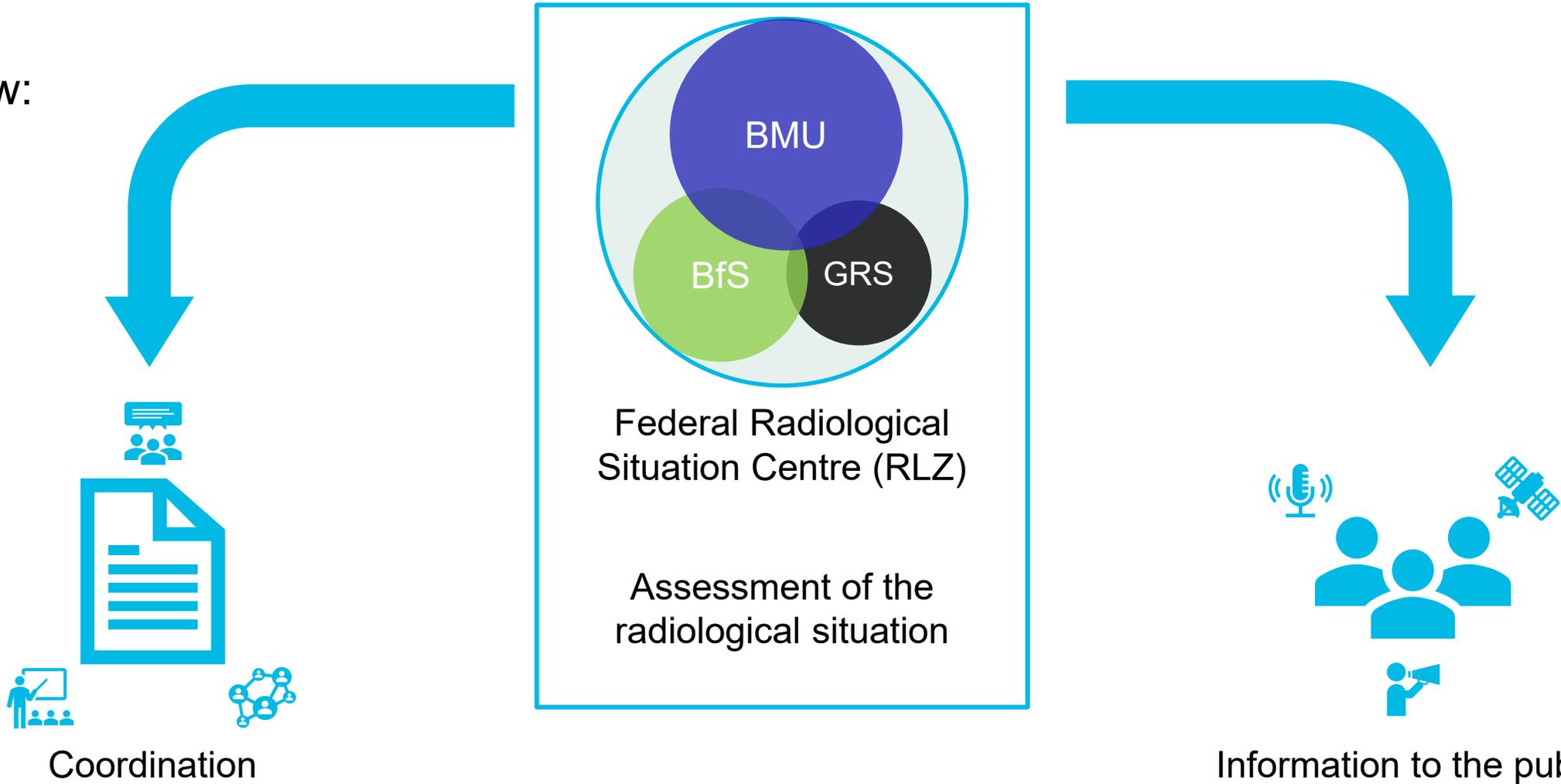
# Emergency management system in Germany

Previous division of responsibilities:

- The tasks of radiological situation assessment and civil protection were mainly the responsibility of the *Länder* (with NPP) ← phase-out of commercial production of electricity from nuclear energy
- The assessment of the situation at the federal level was predominantly to be seen as part of the supervision and was to be used for precautionary radiation protection measures

# Emergency management system in Germany

Now:



# Emergency management system in Germany

Now:

- Federal Radiological Situation Centre (RLZ)
  - statutory tasks (§ 106 StrISchG)
    - Assessment of the situation
    - Coordination
    - Information to the public with behavioral recommendations
- Maintaining the responsibilities of normal situations (sector-interlinking approach), as far as possible
- Increased focus on a nationwide protection strategy for different reference scenarios laid down in emergency plans

# Emergency management system in Germany

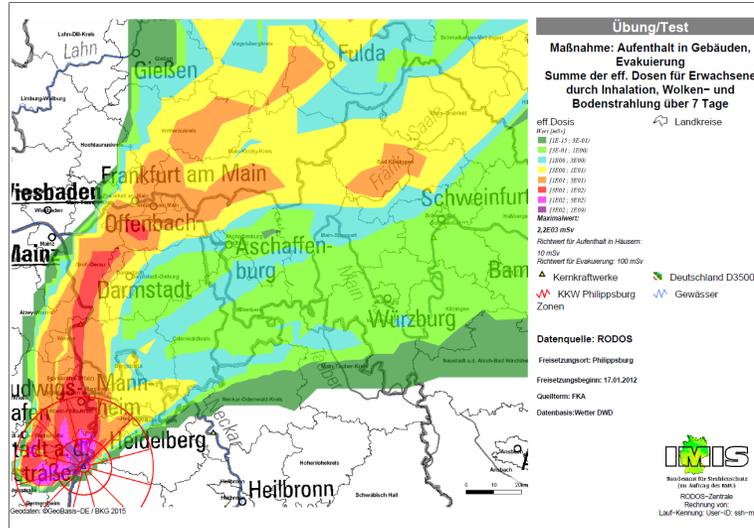
- Emergency plans
  - Plans for the different German levels of administration
    - Federal emergency plans (§§ 98 and 99 StrlSchG)
    - Länder emergency plans (§ 100 StrlSchG)
    - Off-site emergency plans for fixed installations or facilities with special hazard potential (§ 101 StrlSchG) → Interlinking to on-site emergency plans
  - Structure of the plans:
    - General emergency plans with overriding specifications
    - Specific emergency plans for specific administrative and economic sectors
  - The Federal emergency plans will be legislated as general administrative ordinance (AVV) ← Challenge: The process of enacting a general administrative ordinance is relatively complex and time-consuming

# General Federal Emergency Plan (ANoPI) (draft status)

- Reference scenarios as a basis for planning:
  1. German nuclear power plant,
  2. Nuclear power plant in neighbouring countries (close to the boarder),
  3. Nuclear power plant in Europe (> 100 km from boarder),
  4. Nuclear power plant outside Europe,
  5. Nuclear installation or facility other than a nuclear power plant,
  6. Terrorist or otherwise motivated offence,
  7. Transport accident,
  8. Emergency in connection with the handling of radioactive materials,
  9. Satellite crash, and
  10. Case of defence or state of tension.

# General Federal emergency plan (ANoPI)

- Source terms for the reference scenarios were elaborated by GRS (for different scenarios in a NPP, transport accident)
- Dispersion calculations were done by BfS for different NPP/facility sites
- The results form the basis for planning



Meteorological data of one year;  
 80. Percentil of the maximum extension



Nuclear installation	Zone	Radius	Pre-planned measures
Nuclear installations in power operation	Central zone	5 km	Sheltering Iodine thyroid blocking Evacuation within 6 h
	Intermediate zone	20 km	Sheltering Iodine thyroid blocking Evacuation within 24 h
	Outer zone	100 km	Sheltering Iodine thyroid blocking
up to 200 km		Iodine thyroid blocking for children, teenagers and pregnant women	
Decommissioned nuclear installations	Central zone	2 km	Sheltering Evacuation within 6 h
	Intermediate zone	10 km	Sheltering Evacuation within 24 h
	Outer zone	25 km	Sheltering
Research reactors	Central zone	2 km	Sheltering Iodine thyroid blocking Evacuation within 24 h
	Intermediate zone	8 km	Sheltering Iodine thyroid blocking
	Outer zone	20 km	Sheltering Iodine thyroid blocking for children, teenagers and pregnant women

# General Federal emergency plan (ANoPI)

- Classification of an emergency
  - Important for the definition of responsibilities for the assessment of the situation
  - Change of responsibility in the event of an upgrade or downgrade
  - How to formally end an emergency
- Classification of phases of an emergency
  - Important for the protection strategy
  - When to use which measure
- Contains the radiological criteria
  - Reference values for the public and for emergency worker
  - Operational intervention levels for different measures

## Challenges in the preparation of the ANoPI

- The process of enacting a general administrative ordinance is relatively complex and time-consuming
    - Balancing the depth of detail
    - What information should be included, what can be left very vaguely formulated?
    - How can the needs of all stakeholders be taken into account?
    - Revisions after exercises (§ 102 StrISchG)
- As a strategy, the Federal General Emergency Plan is kept very generic and many aspects which may be subject to major changes (authorities designated as contact points, choice of communication tools, etc.) are kept in outsourced documents (e.g. alarm calendar, catalogue of measures).

# Special Federal Emergency Plans

- Supplementation and concretization of the Federal General Emergency Plan
- Areas of application:
  - Civil protection, general averting of a danger and medical treatment (Ministries of the Interior and Health)
  - Drinking water production and supply (Ministries of the Interior and Health)
  - Agriculture and food (Ministry of Agriculture and Food)
  - Medical and pharmaceutical products (Ministry of Health)
  - Other products (Ministry of Labour and Social Affairs)
  - Carriage of cargo (Ministry of Transport)
  - International transport (Customs/Ministry of Finance)
  - Contaminated areas (Ministry of the Environment (BMU))
  - Waste and sewage (BMU)

# Special Federal Emergency Plan „Waste and Sewage“

- Presentation of the relevant regulations in waste management law
- Radiological criteria to guarantee the reference values of the ANoPI
  - Development, adaptation and testing of models in the field of waste management
  - Modelling and prognosis of waste quantities
  - Development of contamination values for a waste categorization in emergency exposure situations
- Further waste management objectives must be defined and considered
  - Does dilution prohibition apply in emergency exposure situations?
  - When does one want to expropriate a waste incineration plant owner if he refuses to incinerate/accept contaminated waste, etc.?
  - How can I minimize contaminated waste as effectively as possible?

## Special Federal Emergency Plan „Waste and Sewage“

- Project 3618S62575 “Development of a detailed waste cadastre from a radiological point of view for all reference scenarios described in the general federal emergency plan for the preparation of the special emergency plan”
  - Definition of suitable waste classes (Where does a breakdown make sense, where can waste types be considered together?)
  - Can waste and production statistics be linked to land use data?
  - How can the influence of a decontamination strategy be integrated?
  - Is it possible to develop an object that links the parameters "land use", "type of waste", "degree of contamination" and "time"?
  - How can you upscale results to large areas?

# Project 3618S62575

- Rough classification of waste
  - Household, commercial or biodegradable components as well as recyclable fractions
  - Challenges:
    - Municipal differences in the grouping of waste codes
    - Values are averaged over annual values, so there are no seasonal influences
- Land-use data can be retrieved by the CORINE project
  - Currently, it is being examined whether there is a correlation between land use and types of waste

## Conclusion

- The implementation of Directive 2013/59/EURATOM into German law is accompanied by a reorganization of the structures of emergency preparedness and response.
- The federal emergency plans are to be incorporated into German regulation as general administrative provisions.
- The ANoPI defines the essential points of emergency management on a generic level, but specifies more than the StrlSchG.
- The ANoPI should be specified in much greater detail in the special emergency plans.
- A number of diverse questions result in a rich spectrum of research opportunities in various areas where expert organizations are in demand

# Thank you for your attention



Gesellschaft für Anlagen-  
und Reaktorsicherheit  
(GRS) gGmbH

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