HERCA
HEADS OF THE EUROPEAN RADIOLOGICAL PROTECTION COMPETENT AUTHORITIES

Western European
WENRA
Nuclear Regulators' Association

HERCA–WENRA Approach

for a better cross-border coordination of protective actions during the early phase of a nuclear accident

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Outline

- Short introduction to HERCA and WENRA
- General European Context
- Cross Border Coordination of Protective Actions
  - National EP&R Arrangements Available
  - Insufficient Information
- European Level of Preparation
- Conclusion

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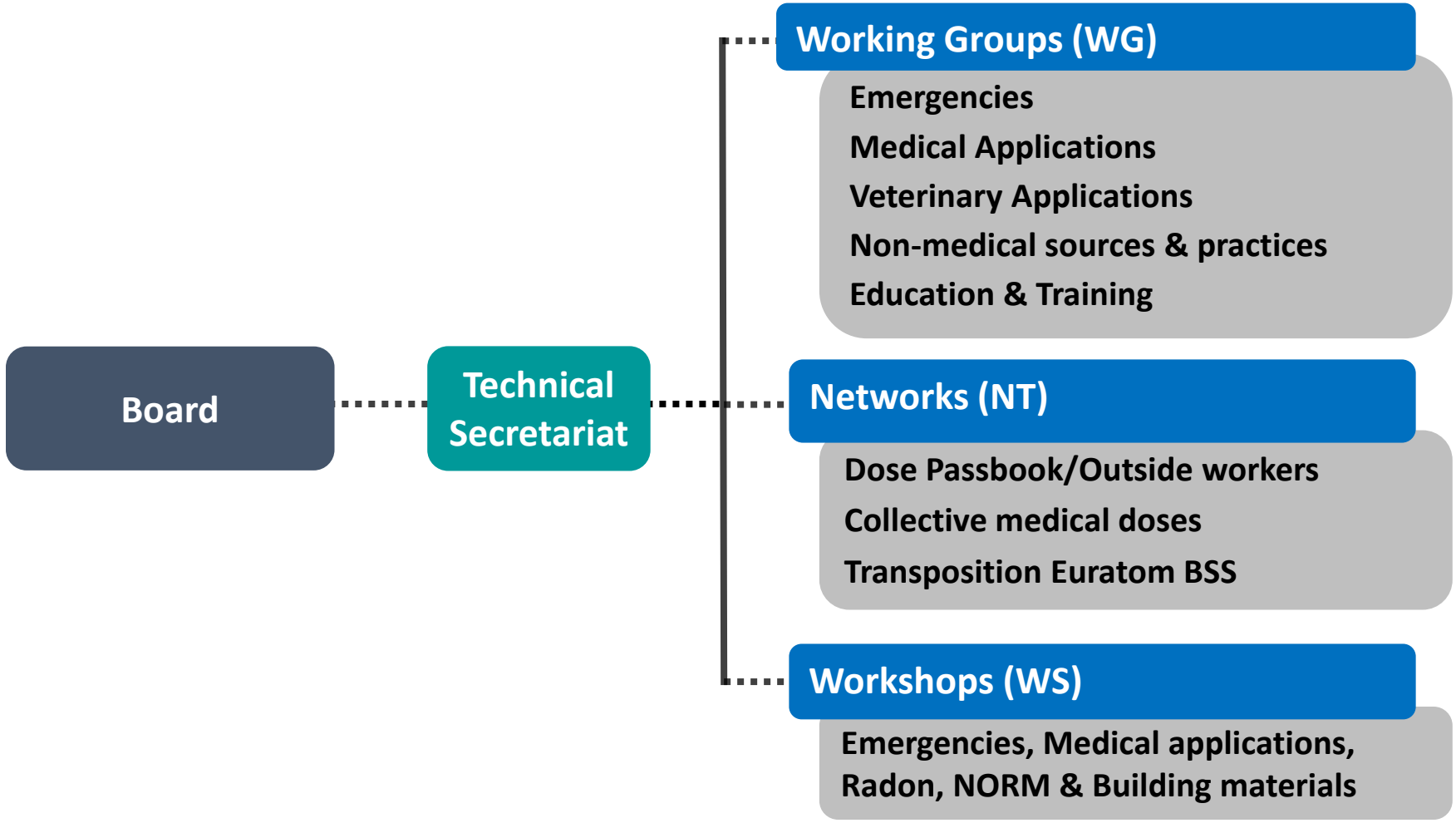
HERCA

- Heads & Senior Officials/Experts of Radiation Protection Authorities (RPAs)
- 32 countries (the 28 EU MS + IS, NO, CH, RS)
- 56 organizations (RPA + TSO)
- 310 nominations
- Observers: EC, IAEA, WHO, FDA

HERCA


Board
Technical Secretariat
Working Groups (WG)
Emergencies
Medical Applications
Veterinary Applications
Non-medical sources & practices
Education & Training
Networks (NT)
Dose Passbook/Outside workers
Collective medical doses
Transposition Euratom BSS
Workshops (WS)
Emergencies, Medical applications, Radon, NORM & Building materials

HERCA

Relations with more than 50 stakeholders

- **International Organisations**: EC, IAEA, IRPA, ICRP, NEA, WHO, UNSCEAR
- **Groups of Authorities/Regulators**: ENSREG, WENRA, EACA, FORO
- **Medical societies:** ESR, EANM, EFRS, EFOMP, ESTRO, PFPS, WONCA, …
- **Research Projects & Platforms**: ENETRAP, MEDRAPET, NERIS, …
- **U.S. Organisations:** FDA, NCRP, CRCPD, EPA
- **Manufacturers:** COCIR, ELC
- **NGOs:** NTW, …

- Special status of the European Commission: regular observer in Board & WG meetings
- Coordination of efforts established with major stakeholders (i.e. MoU & CDA w/ FDA, Special Liaison with ICRP & NCRP, IAEA, NEA, …)
- Regular Observers in WGs: EC, IAEA, WHO, FDA

HERCA
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WENRA

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- Heads & Senior Officials/Experts of Nuclear Safety Authorities
- 18 countries (the 16 EU Member States with NPPs, CH,UA)
- 9 Observers

WENRA

Origins

- Founded in 1999
- Assisted EU Commission in assessing nuclear safety in applicant countries

Mission

- Commitment to **continuous improvement** of nuclear safety in member countries
- Develop a common, **harmonised approach** to nuclear safety
- Develop **Common Safety Reference Levels** (SRLs) based on IAEA standards and good practices in member countries

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Two technical Working Groups established to **harmonise safety approaches** with the aim to continuously improve nuclear safety:

RHWG: Reactor Harmonisation Working Group

WGWD: Working Group on Waste and Decommissioning

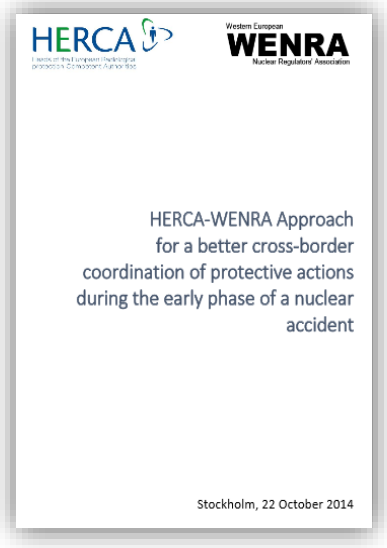
Ad-hoc Working Groups

- Development of Safety Reference Levels (SRLs) for harmonisation of nuclear safety in Europe
- Objectives of Harmonisation

No substantial differences between countries in national safety requirements and in their implementation in the nuclear installations

Collaboration on EP&R

- EP&R = HERCA Top priority since 2008
- HERCA WGE objective:
  Practical and operational response in case of accident including cross-border releases
- 2013 – 2014: HERCA-WENRA Collaboration
- 2014: High Level Task-Force
- Oct. 2014: Publication of the HERCA–WENRA Approach



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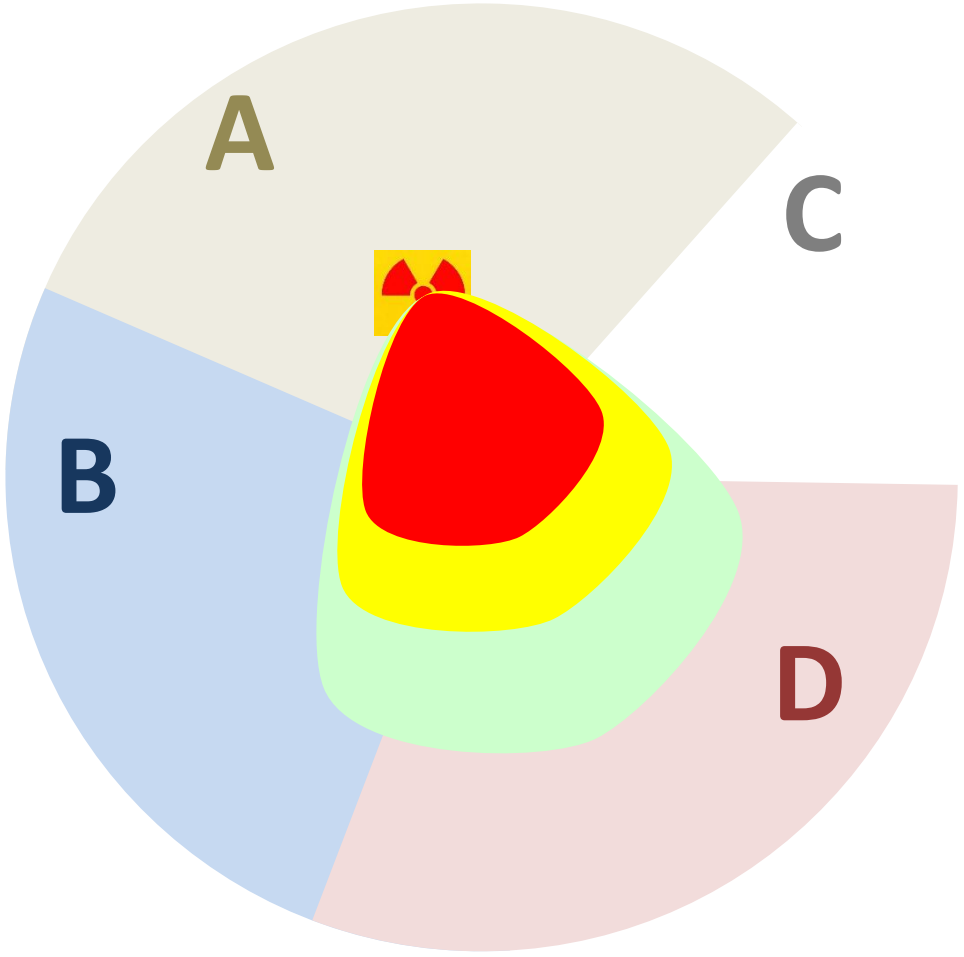
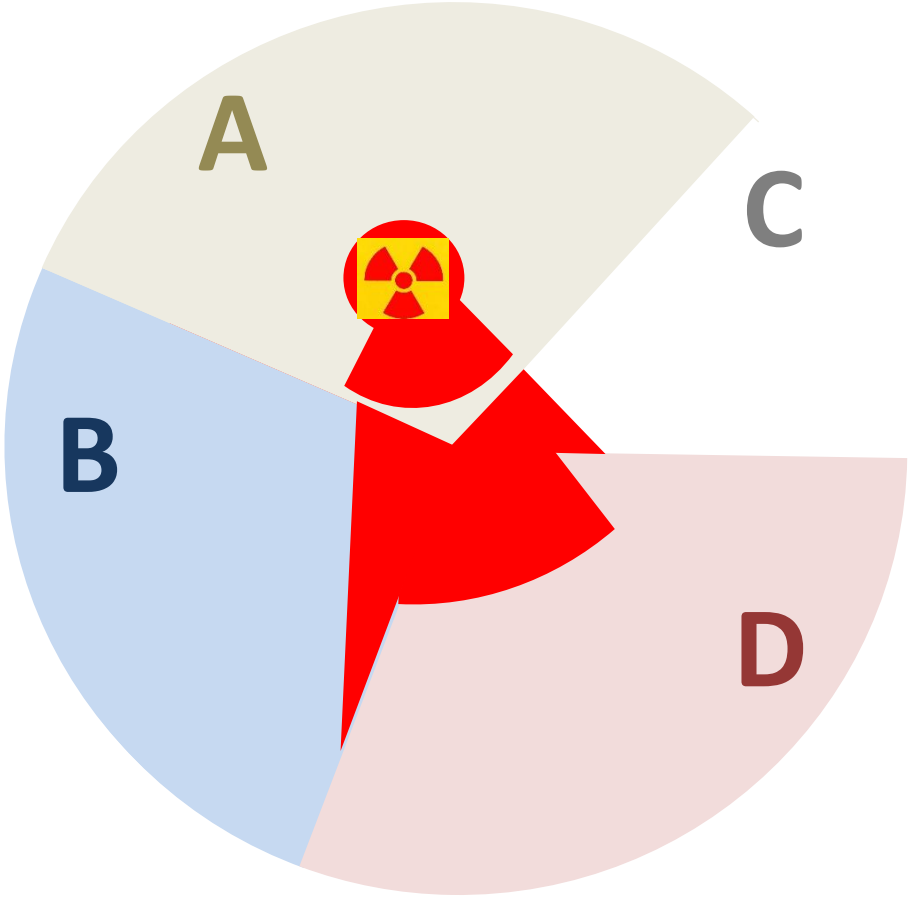
European Situation



A nuclear accident occurs in country A that affects the territories of neighbouring countries.

All countries are fully sovereign in organizing the emergency.

Possible Implementation of Protective Actions



Reason for Lack of Harmonisation

National EP&R has been developed across Europe without giving great priority to cross-border issues

Differences

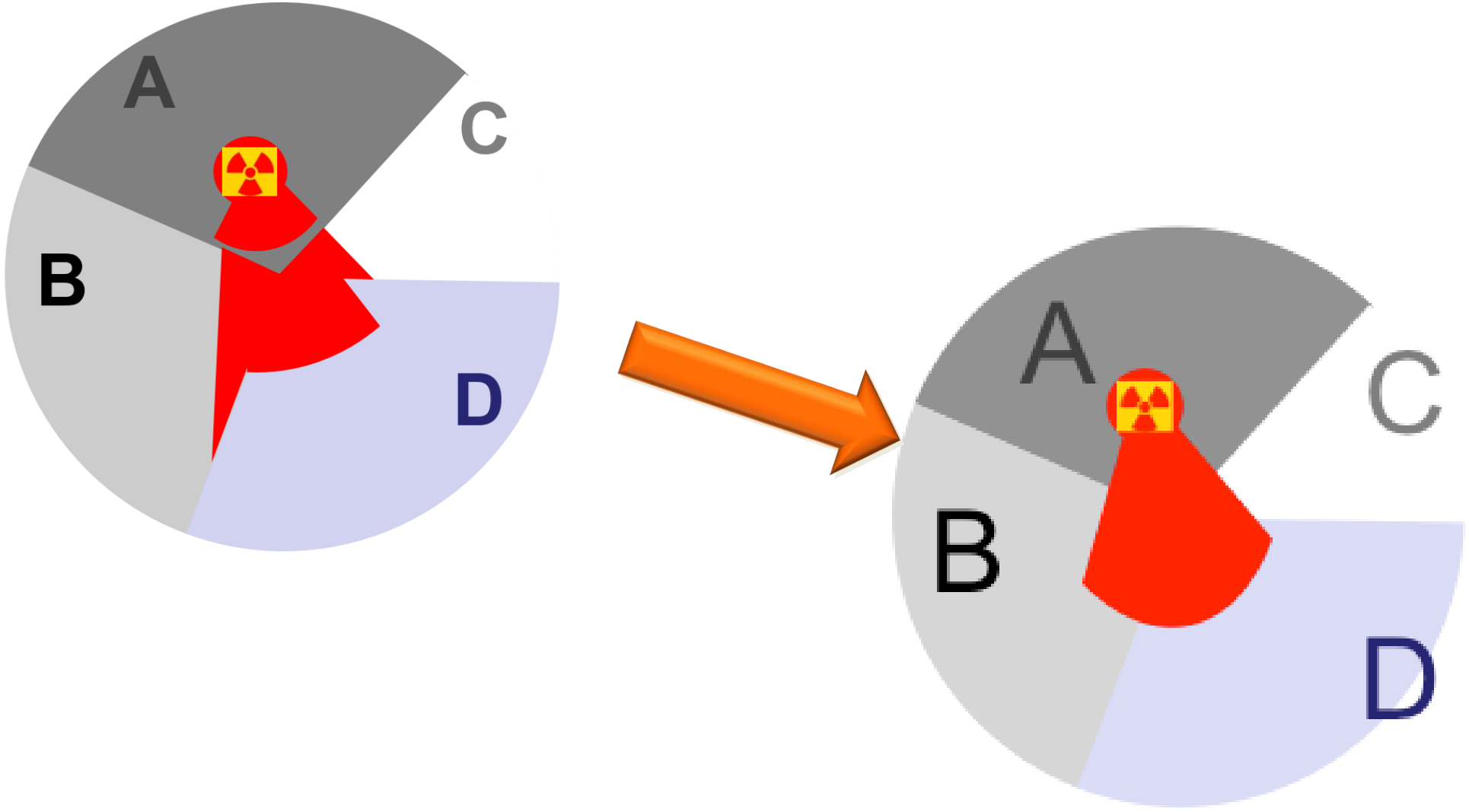
- Types of protective actions
- Criteria for intervention levels for introducing protective actions (in terms of projected dose)
- Operational intervention levels (action levels based on measurements)
- Methods for assessing source terms
- Methods for radiological impact assessment and dispersion modelling
- Definitions of emergency planning zones

General Objective of the HERCA – WENRA Approach

Coordination of response in the early phase of an accident between the impacted country with the aim of a coherent response across borders

Approach jointly approved by HERCA and WENRA on 21 October 2014

Aim to harmonise



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HERCA–WENRA Approach
National EP&R Arrangements

- Before an accident
  - Enhance mutual understanding and trust

- In case of an accident
  - **Early phase of an accident (first hours)**
    Do the same as the country where the accident occurred
  - **Mid-term (after the first hours)**
    Development of a common situation report

HERCA–WENRA Mechanism during the Early Phase

The accident country should provide and update information required to understanding the situation

↓

Neighbouring country uses the information to check consistency of the response in the accident country

↓

Neighbouring country aim at aligning recommendations for decisions on protective actions with accident country

Main Activities

- Implementation and follow-up of the HERCA-WENRA Approach
- Transposition and implementation of the Directive 2013/59/Euratom (Euratom BSS)

Ongoing Activities

- Development of guidance for bilateral or multilateral arrangements
- Development of a common understanding of reference levels concept concerning EP&R
- Development of country fact sheets
- Assessment and Prognosis in Response to an Emergency at a NPP
- Contamination of non-food products
- Follow-up of the implementation of the Approach

Well-established collaboration with IAEA

Special case of an extreme event with insufficient Information

- Knowledge of an extreme event or situation creating a risk of core melt and large radioactive release (extreme natural hazard, terrorist attack, …)
- Lack of sufficient information to rely on the use the regular EP&R arrangements
- Necessity for the safety Authorities to decide and possibly recommend immediate and consistent protective actions to the relevant national Authorities

Evaluation of the Situation

- Simplistic and robust decision making process and criteria
- Use of Judgment Evaluation Factors ("JEFs")
  1. Risk of core melt
  2. Containment integrity
  3. Wind direction

Evaluation of the Situation

JEF	Description	Possible values of JEF		
1	Is there a risk of core melt?	Yes	No	Unknown
2	Is the containment integrity maintained?	Yes	No	Unknown
3	Is the wind direction?	Steady	Variable	Unknown

Protective Actions

- Protective actions considered
  - Sheltering
  - Iodine Thyroid Blocking (ITB)
  - Evacuation
- Other protective actions are not considered by the HERCA-WENRA Approach at this stage

Potential Core Melt without Indication of Loss of Containment Integrity

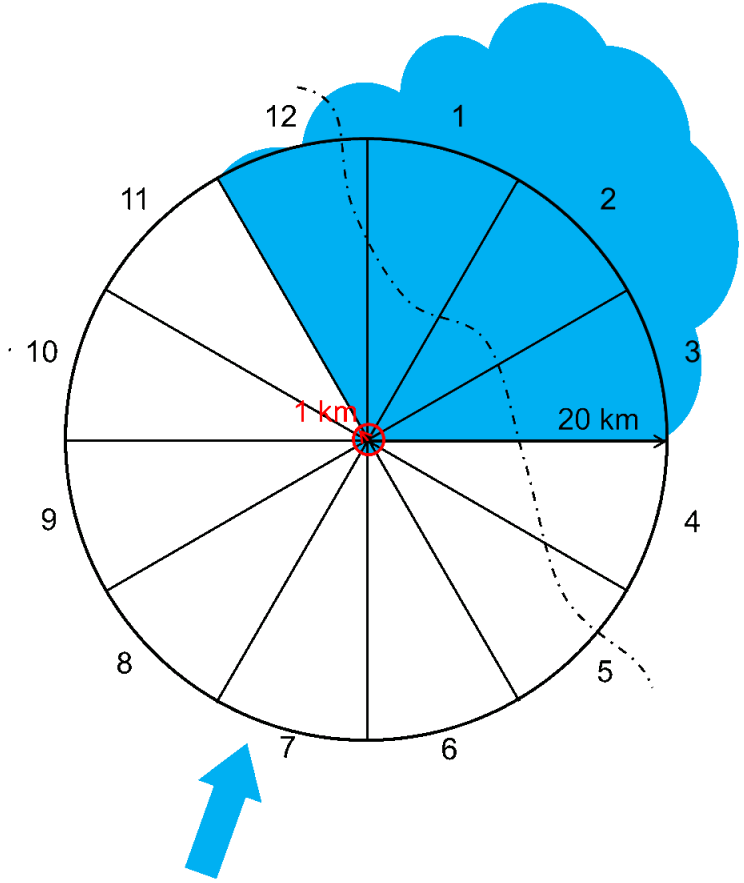
Protective Action	Distance
Evacuation + ITB	up to 5 km
Sheltering + ITB	5 to 20 km

Sheltering is preferred against evacuation under the plume

Potential Core Melt with Indication of Loss of Containment Integrity

- Extended protective actions would become necessary, such as:
  - Evacuation and ITB up to 20 km
  - Sheltering and ITB up to 100 km

Wind direction



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Harmonised Preparation of Protective Actions in Europe

- Evacuation should be prepared up to 5 km around all nuclear power plants, and sheltering and ITB up to 20 km
- A general strategy should be defined in order to be able to extend evacuation up to 20 km and sheltering and ITB up to 100 km
- Radiation and nuclear safety Authorities should continue to promote compatible response arrangements and protection strategies in Europe

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Main Outcomes

- Mechanism for cross border coordination of protective actions during the early phase of an accident, when national EP&R are operational
- Common position for response in the improbable case of a very severe accident with limited information and the need of fast decisions on protective measures
- Agreement on minimum preparedness arrangements (planning zones)

…/…

Main Outcomes

- HERCA-WENRA position is currently shared by radiation protection and nuclear safety Authorities only
- First workshop was organized in June 2016 in Bled (Slovenia) with European Authorities competent in radiation protection, nuclear safety and civil protection
- These Authorities are committed to ensuring further improvement of their collaboration, in view of the implementation of the HERCA-WENRA approach

…/…

Main Outcomes

At HERCA-WENRA Workshop (June 2016, Bled), participants identified:

- issues for further work on food chain protection, the extension of protective actions at distances beyond the emergency planning zones and the different factors to take into account for deciding on protective actions.
- some areas with NPPs near national borders in Europe where in-depth work for implementing HWA should be prioritized, allowing for experience feedback to be used by other sites.

Agreement to continue to work on the implementation of the HERCA-WENRA Approach