HERCA
Heads of the European Radiological protection Competent Authorities

Western European
WENRA
Nuclear Regulators' Association

HERCA-WENRA Approach

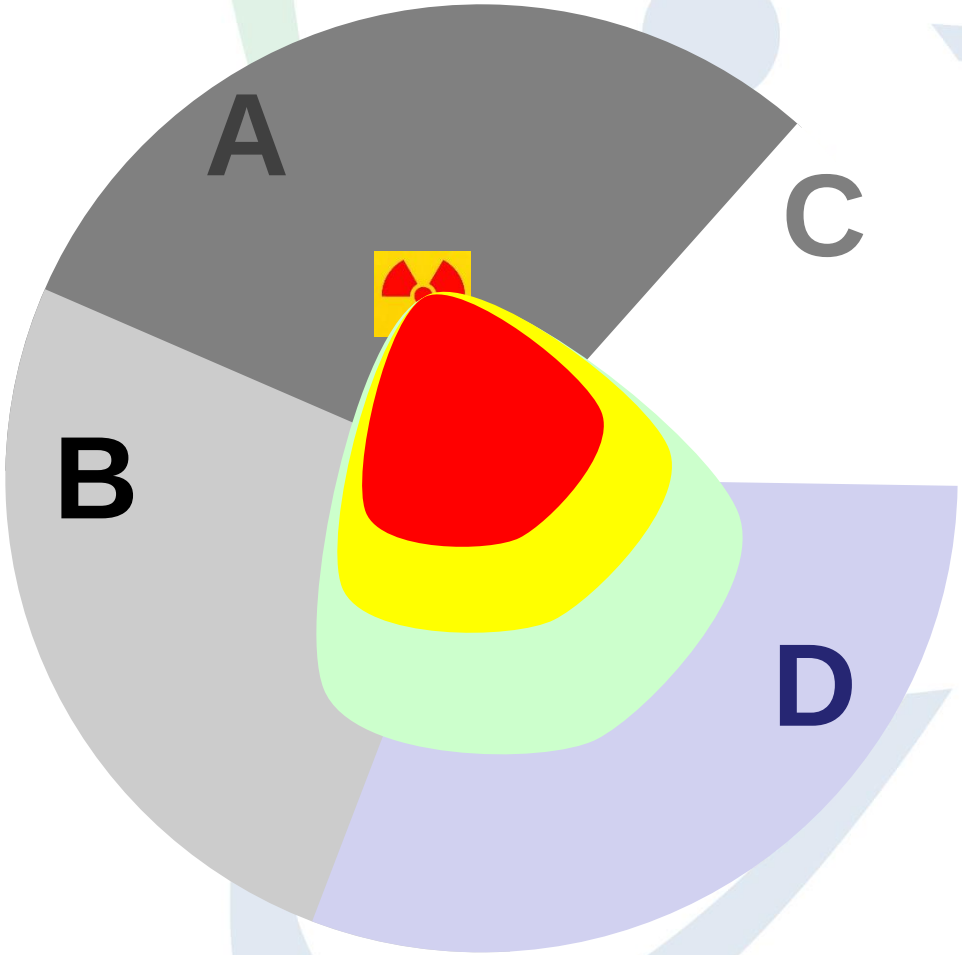
for a better cross-border coordination of protective actions during the early phase of a nuclear accident

Georges PILLER, ENSI, Switzerland
Patrick MAJERUS, Ministry of Health, Luxembourg
Philippe JAMET, ASN, France

Outline

- General European Context
- Cross Border Coordination of Protective Actions
  - National EP&R Arrangements
  - Insufficient Information
- European Level of Preparation
- Conclusion

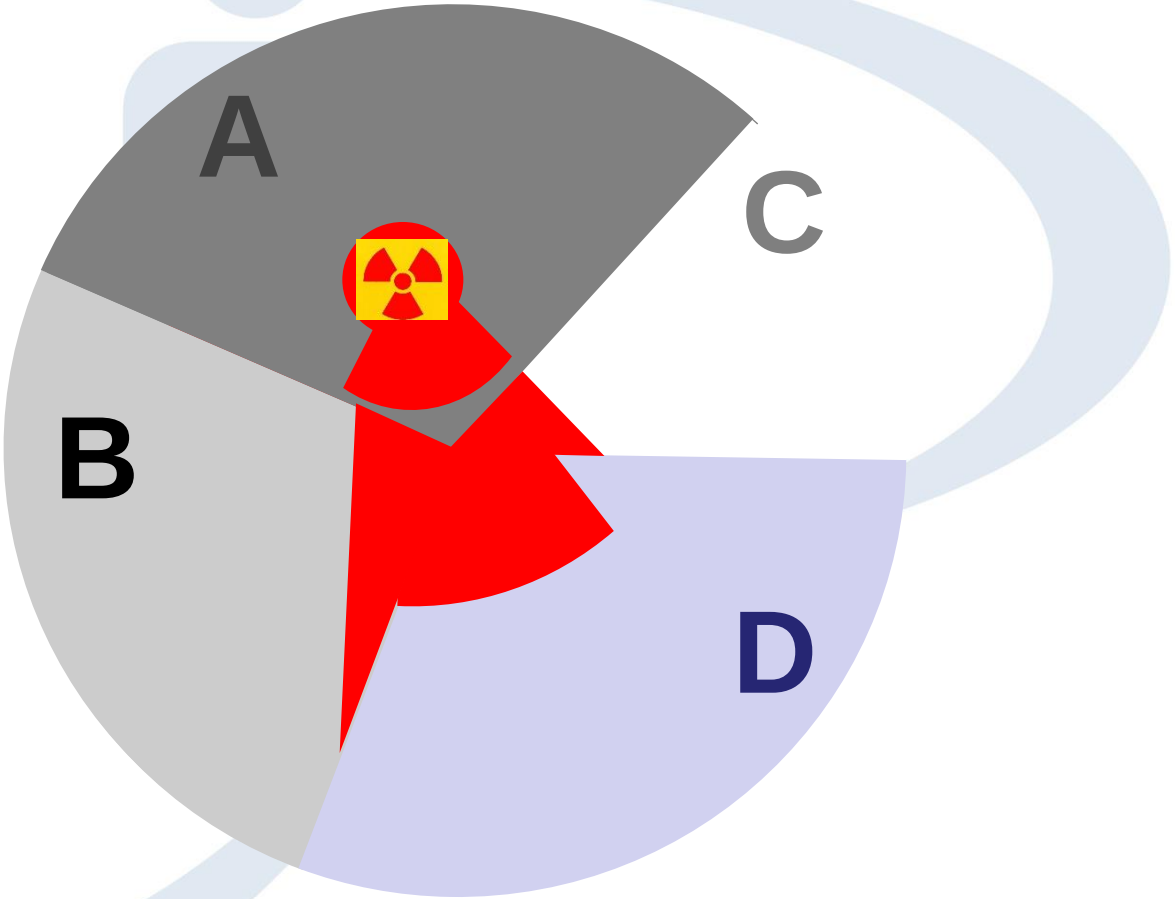
European Situation



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

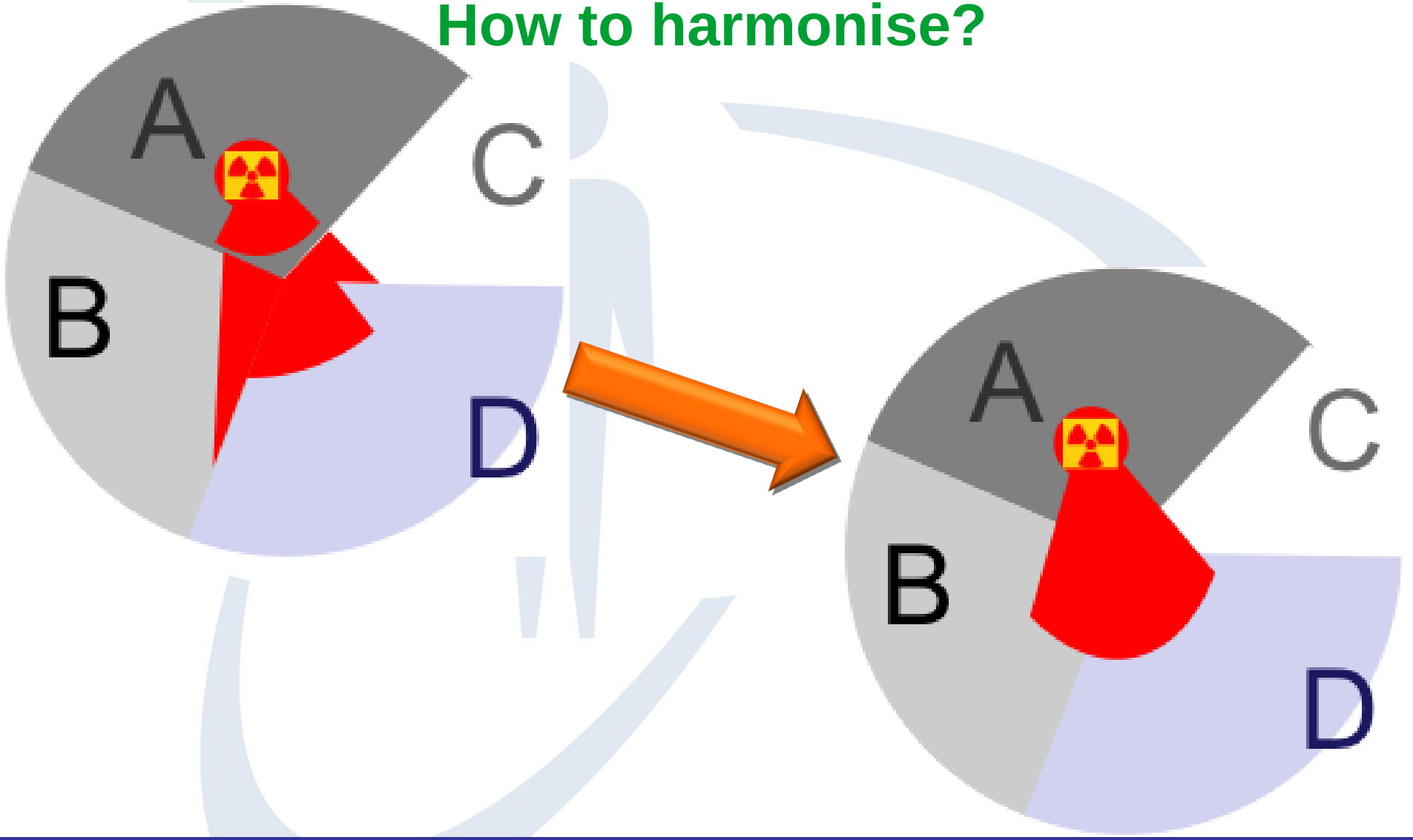
- Types of protective actions
- Criteria for intervention levels for introducing protective actions (in terms of projected dose)
- Operational intervention levels (action levels based on measurements)
- Methods for assessing source terms
- Methods for radiological impact assessment and dispersion modelling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

How to harmonise?



Outline

- General European Context
- **Cross Border Coordination of Protective Actions**
  - **National EP&R Arrangements**
  - **Insufficient Information**
- European Level of Preparation
- Conclusion

HERCA
Heads of the European Radiological protection Competent Authorities

Western European
WENRA
Nuclear Regulators' Association

HERCA-WENRA Approach
National EP&R Arrangements

- **Before an accident**
  - **Enhance mutual understanding**

- **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
Heads of the European Radiological protection Competent Authorities

Western European
WENRA
Nuclear Regulators' Association

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

Continuation of Operational Work

- Development of country fact sheets
- Development of guidance for bilateral or multilateral arrangements
- Develop a common understanding of key elements of the new EU-BSS
- Reduce differences through a coordinated transposition and a better application of international recommendations

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

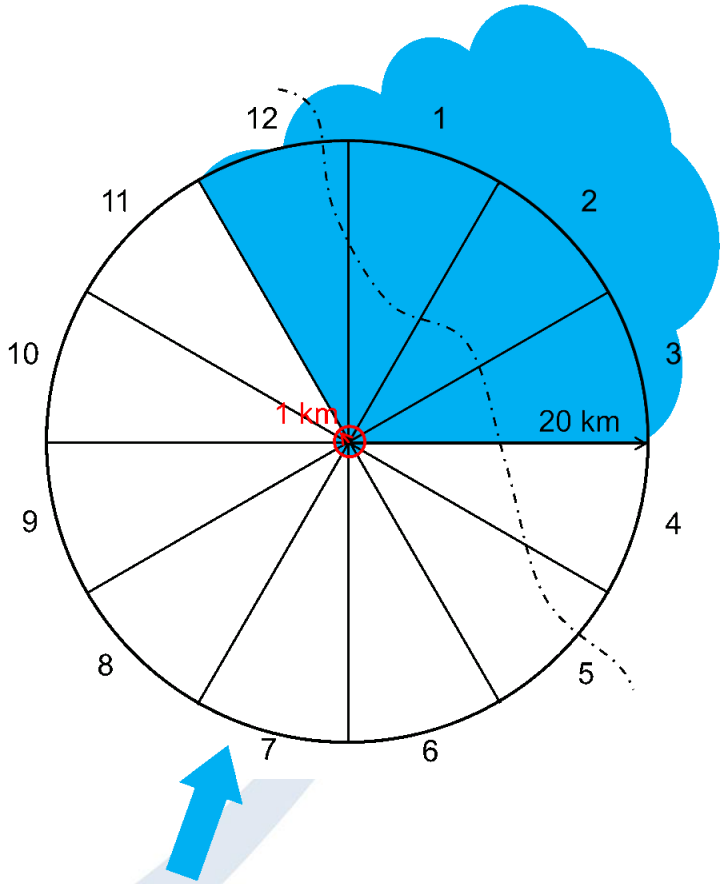
Protective Action	Distance
Evacuation + ITB	up to 5 km
Sheltering + ITB	5 to 20 km

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



Outline

- General European Context
- Cross Border Coordination of Protective Actions
  - National EP&R Arrangements
  - Insufficient Information
- **European Level of Preparation**
- Conclusion

HERCA
Heads of the European Radiological protection Competent Authorities

Western European
WENRA
Nuclear Regulators' Association

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**

Outline

- General European Context
- Cross Border Coordination of Protective Actions
  - National EP&R Arrangements
  - Insufficient Information
- European Level of Preparation
- **Conclusion**

Main Outcome

- **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)**

Next Steps

- **HERCA-WENRA position is currently shared by radiation protection and safety Authorities only**
- **These Authorities are committed to engage discussion with their national Authorities in charge of Civil Protection, in view of the implementation of the HERCA-WENRA approach**