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

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

<table>
<thead>
<tr>
<th>JEF</th>
<th>Description</th>
<th>Possible values of JEF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Is there a risk of core melt?</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>Is the containment integrity maintained?</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>Is the wind direction?</td>
<td>Steady</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Protective Action</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evacuation + ITB</td>
<td>up to 5 km</td>
</tr>
<tr>
<td>Sheltering + ITB</td>
<td>5 to 20 km</td>
</tr>
</tbody>
</table>

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 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