

# **NERIS – European Platform on preparedness for nuclear and radiological emergency response and recovery**

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**CONFIDENCE Training seminar**

**16 April 2019, University of Milan, Italy**

Reference: T. Shneider, NERIS roadmap for further research development on preparedness for nuclear and radiological emergency response and recovery, 5<sup>th</sup> European IRPA Congress, The Hague, June 4-8, 2018

- ▶ NERIS: European research platform on emergency and recovery preparedness and response created in 2010 at the occasion of the IRPA Regional Congress in Helsinki
- ▶ Financial support from the European Commission to structure the Platform (NERIS-TP Project)
- ▶ Adoption of legal statutes in May, 15, 2012 in Glasgow
- ▶ Legal registration under the French Law: August, 28, 2012
- ▶ Self-sustainable since 2014
- ▶ Currently:
  - 66 organisations from 28 different countries
  - 27 supporting organisations

▣ Objectives:

- Improving the effectiveness and coherency of current approaches to preparedness
- Identifying further development needs
- Improving know-how and technical expertise
- Establish a forum for dialogue and methodological development

- ▶ Working Group on **Practical Implementation of the International Commission on Radiological Protection (ICRP) Recommendations** aims at developing guidance and adapting existing decision support systems to the new approach for emergency and recovery preparedness and management.
- ▶ The Working Group on **Management of Contaminated Goods** aims at contributing to the development of strategies, guidance, and tools for the management of contaminated products.
- ▶ The Working Group on **Information, Participation, and Communication** aims at favouring the exchange of experience and elaborate recommendations on information to the public, communication among experts and stakeholders, and participation of the relevant stakeholders in emergency preparedness and response processes.

▶ For the emergency phase:

- Facilitate regaining control on the situation
- Prevent or mitigate consequences for people and the environment by implementing early countermeasure strategies
- Focus on decision-aiding systems

▶ For the recovery phase:

- Develop protection strategies coping with long lasting contamination of the environment
- Integrate societal and economic considerations for the future of the life in the affected territories

First NERIS Roadmap roadmap for further research development on preparedness for nuclear and radiological emergency response and recovery has been adopted in November 2017 with three main challenges:

- ▶ Challenges in radiological impact assessment during all phases of nuclear and radiological events
- ▶ Challenges in countermeasures and countermeasure strategies in emergency & recovery, decision support and disaster informatics
- ▶ Challenges in setting-up a trans-disciplinary and inclusive framework for preparedness for emergency response and recovery

## ▣ Improvement of modelling

- Applicable in all environments (urban, agricultural, forests, etc.) world-wide, including uncertainties and management of big data
- Improved foodchain models to cope with regional and local parameters
- Better articulate models for assessing the exposure of the public, of emergency workers and helpers and monitoring data

## ▣ Improvement of monitoring

- New devices, techniques and guidelines for monitoring in Europe being harmonised
- Optimise monitoring strategies and network for all potential accidental scenarios

## ▣ Development of data assimilation

- Improved capabilities to estimate source locations and source terms reconstruction (inversed modelling)
- Improved capabilities to assess the radiological situation notably with combination of tools with mobile and automated equipment
- Combined tools for improved decision making using Big Data capabilities within Decision Support Systems (refinement of existing computational structures such as platforms, and aggregators)

- ▶ Better knowledge on countermeasures and countermeasures strategies
  - Further analysis of the efficiency of available countermeasures and countermeasures strategies for the different phases of an accident (drawing the lessons from Fukushima management)
  - Development of methodological framework for the implementation and lifting of countermeasures and optimisation approach
- ▶ Improvement of formal decision support
  - Further methodological development of multi-criteria analysis and elicitation of stakeholder preferences to integrate decision making process into decision support tools
  - Further development on the management of uncertainties in decision making and combination of agent-based simulation systems with multi-criteria approach

## ▣ New development in disaster informatics

- Further development of analytical platform and development of knowledge databases to support decision making in case of very little information
  - Integrate new development in information technology
  - Draw the lessons from exercises on the expectations of end-users
- New generation of DSS to collect information on internet and integration of virtual and augmented reality

- ▶ Further development of emergency and recovery framework
  - Integration of reference levels and radiological decision criteria for implementing countermeasure strategies including societal and ethical issues
  - Better addressing transition and long-term phases into the framework and defining success criteria
  - Further development on the management of contaminated goods (food and non-food)
  - Integration of the radiation protection approach in a broader environmental protection framework

- ▶ Elaboration of strategies for stakeholder engagement, involvement and public participation
  - Analysis and guideline for stakeholder and public engagement processes
    - Further identification of roles, constraints, responsibilities and cooperation among the stakeholders
    - Ensuring the preservation of knowledge and experiences of stakeholder engagement
  - Guideline for integrating citizen science in radiological risk governance
    - Identification of factors influencing social trust
  - Better addressing communication issues including social media
    - Production of guidance for operators, regulators, decision-makers and journalists

- ▶ Development of an integrated emergency management including non-radiological aspects
  - Improving health surveillance programme
  - Better addressing socio-economic and ethical aspects in decision making processes
  - Guideline for the development of radiological protection culture
- ▶ Better addressing uncertainties and managing incomplete information
  - Guidance framework and advanced tools to better identify, address and communicate uncertainties
  - Guidance on the role of social media
  - Development of education and training material for decision-makers on uncertainty management

- ▶ Reinforce joint research at European Union level in interaction with the other research platforms
- ▶ Consolidate the connection with organisations involved in the management of Chernobyl and Fukushima accidents, notably with ICRP and Japanese organisations
- ▶ Engage dialogue and consultation with stakeholders
- ▶ Towards harmonisation of Emergency and Recovery approaches in Europe

**Thank you for your attention**

[www.eu-neris.net](http://www.eu-neris.net)