

Research Needs identified from the NERIS GAP Analysis

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NERIS is a European platform on preparedness for nuclear and radiological emergency response and recovery, founded in June 2010. The mission of the NERIS Platform is to establish a forum for dialogue and methodological development between all European organisations and associations taking part in decision making of protective actions in nuclear and radiological emergencies and recovery in Europe. 65 institutions (from 27 different countries) are currently members of the NERIS platform from which 28 (from 18 EU countries) are supporting organisations.

An integral part of the NERIS mission is to identify gaps and needs for further research and developments and addressing new and emerging challenges in the field of preparedness for nuclear or radiological emergency response and recovery. The Strategic Research Agenda (SRA) of NERIS, coordinated by the NERIS R&D Committee, identifies these research needs and a new version has been published in November 2019.

This document proposes research activities based on the current gap analysis on research priorities put forward by the NERIS community that have not been (fully) addressed by national or international research projects. The key features of NERIS research activities are to contribute to the development of robust and transparent decision-making processes for the management of emergency response and recovery, including the accurate assessment of the radiological impact, adapted to different situations, usable at local, regional, national and international levels and addressing the concerns of all interested parties. For this purpose, it is essential to rely on the up-to-date scientific development in the different fields of radiation protection, to adopt a multi-disciplinary approach and to promote applied research in cooperation between authorities, emergency centres, research organisations and the academic community in different countries, as well as interactions with key concerned stakeholders with the goal to enhance adequate and coherent response throughout Europe in case of a nuclear and radiological event. In this perspective, the following research priorities call for common development with the other research platforms in the field of radiation protection (i.e. MELODI, ALLIANCE, EURADOS, EURAMED and SHARE).

Proposal for research activities based on the GAP analysis

- ▶ Improvement of hydrological models, including urban hydrology, surface run-off and marine environment
- ▶ Application of foodchain models at the local level to derive sensible countermeasure strategies

CONCERT WP2/WP3

- ▶ Improvement of dose assessment models considering both environmental monitoring data and personal monitoring data (e.g. personal dosimeters, thyroid measurements, whole body measurements)
- ▶ Improved monitoring including lay people, drones and European wide harmonisation of tools and methods
- ▶ Methods and guidance to optimise countermeasure strategies: development of measuring strategies to guide practical countermeasure implementation
- ▶ Methods and guidance to optimise countermeasure strategies: how to implement/apply the residual dose approach, how to implement fully the guidance from ICRP in terms of simulation and guidance for decision maker
- ▶ Research on lifting of countermeasures by developing an integral approach with simulation models and Operational Intervention levels (OIL); improved OILs extending the IAEA approach
- ▶ Stakeholder engagement database, better analysis of societal needs for an evaluation of legal instruments and governance frameworks, methods and tools for stakeholder engagement
- ▶ “emergency ethics” vs. “normal ethics” to develop guidelines for evacuation and post-accident management, compensation schemes
- ▶ Development of health surveillance approaches, dose reconstruction methods, socio-psychological and economic aspects of medical follow-up