# Special issue: Networking in biological and EPR/OSL dosimetry: the European RENEB platform for emergency preparedness and research

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EDITORIAL

# Special issue: Networking in biological and EPR/OSL dosimetry: the European RENEB platform for emergency preparedness and research

This special issue is dedicated to RENEB, a network of biological and retrospective physical dosimetry, which was established to support emergency preparedness and response in large-scale radiological disasters. Such nuclear events may happen everywhere without prior warning, even in technologically advanced countries. They may be caused by technical breakdowns, human failures but also by terroristic acts. Each of these scenarios may have consequences for human health, the environment and economy. In many cases, the impact of such a nuclear or radiological event on the society as a whole and on the quality of life of individuals will be severe and most probably will exceed the physical level of damage, as not only direct deterministic or stochastic health effects have to be mastered but also the psychological consequences resulting from anxiety and fear of unknown consequences of real or putative exposure. Experience from past accidents teaches that people can cope with their radiological situation provided that they receive reliable information about the doses which they received and the expected health consequences as well as information about possible countermeasures people can take in their own hands. Individual dose estimations for possibly exposed people, first responders but also for distressed 'worried well' individuals can help to build trust and prevent a confidence crisis. However, the knowledge of the actual received dose is also of overriding importance for the optimal medical care of exposed people.

To be better prepared for radiological and nuclear emergencies in Europe, the European network of biological and physical retrospective dosimetry, RENEB, was initiated in 2012 with the aim to significantly increase individual dose reconstruction capacities in case of large-scale radiological events. The process of dose estimation based on biological samples and/or personal electronic devices has been harmonized and optimized to support the rapid dosimetric categorization of a large number of victims. Communication and cross-border collaboration was standardized and cooperation with national and international emergency and preparedness organizations such as the International Atomic Energy Agency (IAEA) and the World Health Organization (WHO) were initiated. During this process, the value of RENEB to also support activities outside emergency preparedness became evident. The established strategies to guarantee harmonized performance between the partner laboratories now enable the network to contribute also to large-scale research projects aiming at analyzing biological effects of low radiation doses, radiation sensitivity, or biomarkers in molecular epidemiological studies. RENEB has shown potential as a driving factor for the identification and overcoming of methodological shortcomings and for the development and evaluation of new exposure markers, e.g. for quantifying acute or protracted exposures, as well as exposures dating back years or decades.

While the establishment of the network was supported by the European Commission for four years, RENEB now stands on its own feet. The future is challenging, but also encouraging. With its ready-to-use operational basis, its quality assurance and education and training concept, RENEB is of benefit for emergency preparedness and response as well as for radiation research. Even though RENEB is a European network, successful collaborations have been initiated with colleagues from all over the world and links to global emergency preparedness and response systems were established.

We thank all partners and colleagues for their engagement and passion which made RENEB a success. We also appreciate the support, enthusiasm and patience of all authors, reviewers and managing editors, who contributed to this special issue.

We are looking forward to ongoing and new collaborations.

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