

## Improvement of health risk assessment associated with low dose/dose rate radiation

### Challenge

Today the main uncertainties in radiation health risk assessment relate to (i) the magnitude of cancer risk following protracted exposures of the order of 100 mSv or less and organ specific risks following acute or protracted doses of a few hundred mSv, particularly for inhomogeneous dose distributions, and (ii) the magnitude of the risks of vascular and cognitive disease, cataracts and other tissue injury below 500 mSv. A better understanding of the effects of low-dose ionizing radiation on human health and the mechanisms leading to radiation-induced diseases, is essential for radiation protection of populations and individuals in all situations occupational, medical, emergency and in the course of normal life.

In order to consolidate further the radiation protection system, it is necessary

- to improve understanding of the biological mechanisms underlying radiation-induced diseases and of the factors that modulate the risk of diseases
- to improve the health risk evaluation through classical and/or molecular epidemiological studies
- to address the effects of, and risks associated with, internal exposures, differing radiation qualities and inhomogeneous exposures.

These are long-term goals, which can however be achieved through a succession of steps which can be implemented into the radiation protection system when research results are appropriately validated.

### Scope

Proposals should identify concrete research steps that are likely to contribute effectively to the above-mentioned challenge. For this purpose, appropriate attention should be given to the quality of the dosimetry, outcome data and other relevant data to be obtained and/or analysed in the course of the project. High priority is given to studies relating to cancer and vascular diseases, but other radiation-induced diseases are also of interest.

### Expected impact

Research results are expected to contribute to protect people's health on an individual and collective basis through the optimization of future European BSS. Additionally, given the long-term nature of the work, the impact may be through contribution to the evolution of global protection standards and the evidence base on which they are formulated.

### Type of action

Research and innovation actions. Project proposals may address part of the scope.