

Congressional Briefings on “The role of Radioecology in National Security”,  
Capitol Hill, Washington DC (USA), 6 October 2016

Radioecology and our future: Radioecology’s contribution to preserving ecosystem health

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**ABSTRACT:** Ecological impact of radiation, as resulting from nuclear accidents or potential malevolent actions, has become a global environmental issue within the list of current concern (climate change impact, biodiversity decline and stressor’s impact on the biosphere). Indeed, despite 3 majors accidents (Three Miles Island, Chernobyl, Fukushima), nuclear activities continue to spread throughout the world together with associated waste issues, and often in countries with limited or no expertise on environmental risks. Furthermore, understanding the ecological impact of radiation is still debated within the scientific community, leading to potentially unjustified distrust from society with respect to the ability of authorities to take adequate measures for mastering nuclear risk. This is particular critical when realizing that unplanned dispersion of radioactivity over large areas no longer can be considered as unlikely. It is therefore crucial to maintain worldwide expertise such as to make sure that we have the operational capacity to face risk. The International Union of Radioecology, a non-governmental and non-profit international association (nearly 1500 members representing 58 countries) is committed to “ensure the sustainable development of nuclear activities with respect to man, the environment and future generations”. IUR develops its actions in four main directions: networking, teaching and training, communication and brainstorming, that are further supplemented via a number of agreements signed with various thematic or regional networks dealing with radioactivity and the environment. On this basis, IUR has engaged a cycle of intensive brainstorming in order to identify how best improving our limited understanding of what is the actual ecological impact of radiation. Further to traditional lines of thinking in human radioprotection which involve radiobiological inferences in individual organism level, ecosystem approaches, featuring consideration of populations and interspecies interactions, appear necessary for adequate ecological risk assessment of radiation. An ecocentric vision is under construction which conceptualize how human health is also bound to ecosystem health which needs to be preserved from potential radiation alteration. In order to reach this goal however, the Union together with the US National Center for Radioecology managed by the Savannah River Ecology Laboratory, is currently concerned by the growing lack of (funding) effort to train the next generation of radioecologists.