

Abstract submission form

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Abstract information

Presentation type [1]	Oral
Select one or more topic [2]	Updating handbooks, guidelines and recommendations
Subject of the presentation	TERRITORIES guidance on radioecological models to support decision making in post-accident situations
Participation NERIS Young Scientist Award [3]	no
Proceedings of the Workshop 2020 [4]	maybe

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TERRITORIES guidance on radioecological models to support decision making in post-accident situations

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Introduction

TERRITORIES*, a 3-year project (Jan. 2017-Jan. 2020), aimed "To Enhance uncertainties Reduction and stakeholders Involvement TOwards integrated and graded Risk management of humans and wildlife In long-lasting radiological Exposure Situations" and has led to practical recommendations, disseminated in deliverable reports, all available under <https://territories.eu/publications> and <http://concert-h2020.eu/en/Publications>.

This presentation specifically addresses two of these deliverable reports, D9.61 and D9.62, considering the use of radioecological models, i.e. quantifying the transport of radionuclides in the environment and their transfer from one environmental compartment into another, to provide the basis for predicting doses to humans and non-human biota, which in turn are the input for supporting decision-making. Even if the scope of the documents was wider, case-studies shown to illustrate this presentation are limited to post-accident situations.

How to model fate of radionuclides in the environment in a fit-for-purpose approach (D9.61)

To account for the consideration that many processes are not perfectly known, overestimation of the predictions is normally sought in the radioecological models. To avoid undue restrictions caused by poor results of the models, improvement of models is desirable and a continuous effort in this direction is needed. A methodology has been proposed to systematically improve the models by providing a conceptual overview of the system through the use of Interaction Matrices and Features, Events and Processes.

For the developers and the end users of the models, objective indicators to show whether models are improved or not, are desirable. A methodology combining quantitative and qualitative indicators has been also proposed and applied to several real examples.

How to perform uncertainty and sensitivity analyses in radioecological modelling (D9.62)

Uncertainty in the output of a radioecological model arises from many different contributions. Careful analysis of the uncertainty budget is the prerequisite to assess the quality and robustness of model predictions and/or forecasts. It also helps to critically evaluate the underlying scientific basis and increases confidence and acceptance when communicating scientific results to stakeholders and the public. State of the art for coping with propagated parameter uncertainty and conceptual model uncertainty in the field of radioecology has been reviewed. In particular, available methodologies are explained and literature references from the field of radioecology are provided to the reader. Test cases give examples of how the methodologies for dealing with the quantification of different types of uncertainty, including probabilistic and Bayesian approaches, can be applied to real situations and models in the field of radioecology. A list of good practices is provided to support the reader in understanding and carrying out uncertainty analysis of radioecological models.

Conclusion

Finally, as further developed by Guillevic *et al.* (submitted to this NERIS workshop), radioecological models are technical tools serving post-accident governance, for which recommendations have also been proposed.

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