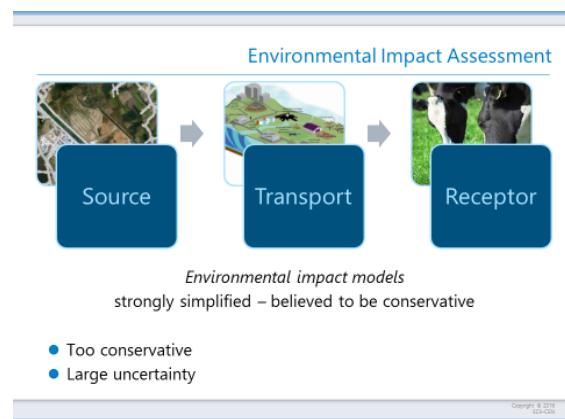




## Radioecology in support of regulatory decision-making

The international workshop «Radioecology as a Support to Regulatory Decision Making at NORM and other Legacies, Related Waste Management and Disposal» 3 September 2017, Berlin, succeeds to gather regulators, scientists and operators at international level. The purpose was to jointly discuss interfaces between science and regulatory needs and demands, experienced challenges and possible future collaborative activities.



*Scientific support in regulatory decision making at different legacy sites.*

### General information

The Norwegian Radiation Protection Authority (NRPA) and Belgian Nuclear Research Centre (SCK•CEN) organized jointly the International Workshop 'Radioecology as a Support to Regulatory Decision Making at NORM and other Legacies, Related Waste Management and Disposal'. The workshop was held as pre-conference event of the 4<sup>th</sup> International Conference of Radioecology and Environmental Radioactivity (ICRER) in Berlin, 3-8 September 2017. The workshop was attended by 37 participants from 19 countries, illustrating the international interest in the subject of how radioecology can support the management of NORM and other legacy sites and associated waste management and disposal.

### Background

The practical role of radioecology, in support of the regulatory decision-making processes, is to develop and provide the science base, methods and tools necessary for underpinning the guidelines, for assessments prior to regulatory (remediation) actions, but also for post-remediation monitoring and compliance checking. Basically, radioecology provides answers to important questions and issues from regulatory bodies and operators. Independent development of the scientific disciplines, regulations and regulatory mechanisms, as well as waste management and disposal strategies linked with site remediation, has previously been internationally highlighted as not being optimal for overall efficiency, integration and harmonization. To help resolve that, NRPA has now organized the third international workshop (after two successfully held in Bergen, 2008 and Barcelona, 2014) to

promote cooperation between scientific and regulatory bodies and the application of good science, especially radioecology within the regulatory process for nuclear and radiation legacy sites.

### Objectives and scope of the workshop

The overall objective of the workshop was to evaluate progress and enable further linking of radioecology with regulatory needs in case of NORM and other legacies and their waste. We aimed providing a general forum for discussion and understanding between scientists and regulators concerning various NORM legacy issues and to consider how radioecology can ensure input to a more comprehensive approach to deal with legacy issues.

### Workshop programme

The workshop was structured around three topical sessions that included presentations and discussion on following themes:

- International initiatives concerning the need for closer collaboration among scientists, regulatory bodies and operators
- Main challenges for regulators and operators in decision-making and management processes at legacy sites
- Main radioecological uncertainties in state-of-the-art assessments - issues to be addressed in future collaborative work at international level

Last workshop session was dedicated to comprehensive discussion and drafting of workshop conclusions.

### Conclusions

The role of science, and particularly radioecology, in regulatory decision-making has been shown via various examples of international activities and national case studies. Several aspects of interface between radioecology and regulatory decision-making have been evaluated and challenges discussed.

Radiological assessments are one of the aspects in the management of NORM contaminated sites and there is a consensus in opinions that environmental and chemical aspects must be considered in parallel, particularly since chemical risks tend to dominate over radiological risks. Risk assessments

should be holistic and harmonised, irrespective of the hazard, to support decision-making and stakeholder engagement.

Need on further scientific developing of models that are used to support decisions around legacy site management and evaluate remediation options has been highlighted. In order to improve and validate existing assessment models, it may be beneficial to evaluate them relative to the post-remediation situation to compare their output against the observations.

Workshop participants have identified common challenges in communication of uncertainties in dose assessment. It has been shown that using approaches with only conservative modelling and demonstration of compliance can cause communication issues on a large scale. This then calls for more realistic assessments for communication purposes. More realistic assessments are also required if options are to be realistically and reliably compared.

The involvement of stakeholders in legacy programme discussions can help support regulatory decision making by reducing controversy. This has been recognized internationally and practical examples on national case studies have confirmed it.



*Regulators and scientists gathered to discuss interfaces and better use of sciences in decision making processes. Photo: Jelena Mrdakovic Popic, NRPA*