

CONFIDENCE: COping with uNcertainties For Improved modelling and DEcision making in Nuclear emergenCiEs

Research project as part of the H2020 grant agreement 662287 - CONCERT

PREPARE Project - Innovative integrated tools and platforms for radiological emergency preparedness and post-accident response in Europe – 7th Framework Programme (2013-2016)

Main goal was to close gaps that had been identified in nuclear and radiological preparedness following the first evaluation of the Fukushima accident

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Focused on uncertainties in the area of emergency management
and long-term rehabilitation

Duration: 3 years (2017-2019)

Total budget: 6.2 M €

Consortium: 31 partner organizations from 17 European
countries

CONFIDENCE Consortium:

Coordinator: **KIT** - Karlsruhe Institute of Technology (Germany)

BfS (Germany), **CEH** (United Kingdom), **CEPN** (France), **CIEMAT** (Spain), **EPA** (Ireland), **EEAE** (Greece), **HMGU** (Germany), **IRSN** (France), **MUTADIS** (France), **NMBU** (Norway), **NRPA** (Norway), **University of Zurich** (Switzerland), **PHE** (United Kingdom), **DTU** (Denmark), **RIVM** (Netherlands), **SCK•CEN** (Belgium), **STUK** (Finland), **UMIL** (Italy), **VUJE** (Slovak Republic), **KNMI** (Netherlands), **APA** (Portugal), **DIALOGIK** (Germany), **WARWICK** (United Kingdom), **IST** (Portugal), **REC** (Slovenia), **RIKILT** (Netherlands), **EXTREMADURA** (Spain), **UK Met. Office** (United Kingdom), **MTA EK** (Hungary), **Norwegian Met. Institute** (Norway)

Scope of the project

The CONFIDENCE Project aims to close existing gaps in several areas of emergency management and long-term rehabilitation. It concentrates on the early and transition phases of an emergency, but considers also longer-term decisions made during these phases.

Research Activities

CONFIDENCE aims to improve decision making for the protection of the population affected by nuclear emergencies and to minimize disruption of normal living conditions. This will be achieved through the reduction of uncertainties, where practicable, and the development of approaches to deal with uncertainty information. It will use a multidisciplinary approach dealing with all aspects regarding the radiological situation following an accidental release, from the prognosis of dispersion and its spatial-temporal evolution, to the offsite consequences, and the decision making to select, implement and evaluate remediation strategies, including the viewpoints of stakeholders. Some of the innovative software solutions will be integrated into Decision Support Systems (DSS) for operational use in the nuclear emergency management.

The scientific challenges will be addressed through six interlinked work packages (WP), with an additional E&T WP , to achieve the following objectives:

WP1:

Tackle uncertainties in the pre- and early release phase of the accident, by (i) identifying and ranking the main sources of uncertainties; (ii) characterizing and quantifying their effect on simulation results (e.g., activity concentrations, dose assessment, reference levels); and (iii) proposing practical solutions to better take into account these uncertainties in an emergency response context

WP2:

Develop comprehensive software tools for the quick and efficient assessment of cancer risk to affected populations to be used as an input in the overall decision making process;

Develop approaches and tools integrating external and internal dosimetric monitoring data to obtain a comprehensive picture of the radiological situation and link it with dose simulations and risk assessment tools to support decision making

WP3:

Improve the capabilities of radioecological models used to predict activity concentrations in foodstuffs and to better characterize, and where possible, reduce uncertainties

WP4:

Engage national stakeholders to improve the preparedness and response in the transition phase, and to identify and reduce the uncertainties in the subsequent management of the long-term exposure situation, reflecting requirements from the new European Basic Safety Standards

WP5:

Identify social and ethical issues related to uncertainty management in emergency and post-accident situations and clarify how stakeholders at the various levels deal with uncertainty in their decision making processes

WP6:

Support and improve communication of uncertainties and facilitate robust decision making taking into account the variability of the radiological situation and decision makers' preferences

WP7:

Develop training courses and educational material for professionals and students related to the issues and activities addressed in CONFIDENCE

E&T activities comprise:

- Guidance on the use of uncertainty information by decision makers at the various levels within the decision making process
- Building of capabilities, trust and confidence in radiation protection issues
- Final dissemination workshop to demonstrate the new methods and tools to all potential end users