



The Future
of Fully integrated human
exposure assessment of
chemicals: the  tool

The Future of Fully integrated human exposure assessment of chemicals:

Ensuring the long-term viability and technology transfer of the EU-FUNded 2-FUN tools as standardised solution

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The context

The assessment of chemical exposure and risks to human health is of major concern for policy and benefits all citizens.

The 2-FUN project, funded under the European Union's Sixth Framework Programme, produced a software containing advanced exposure assessment methodologies, coupling environmental multimedia and pharmacokinetic models. This software resulted to be an innovative and useful tool, but it was a 'prototype' and not a standardised software.

The 4FUN project, funded under the European Union's Seventh Framework Programme, will take the results from the 2-FUN project to develop a standardised tool, MERLIN-Expo, which will be put on the market and disseminated to end-users.



Project Goals

1

Innovate and exploit the 2-FUN prototype software:

- analysis of the strengths, weaknesses, opportunities and threats (SWOT) of existing exposure assessment tools in order to identify gaps between current and desired conditions in exposure assessment
- analysis of case studies to improve the reliability of modelling estimations and to demonstrate the feasibility of building complex realistic scenarios.

2

Creation of the standardised MERLIN-Expo tool:

- implementation of standardisation protocol to improve accuracy, precision and robustness of modelling results
- development of standard documentations to reach a wide range of end-users (regulators, SMEs, industries, academics) and to support policy making

3

Transfer to stakeholders:

- release of the improved and standardised MERLIN-Expo tool
- delivery of supporting documentation (i.e. web-based training materials)
- organization of training courses for end-users ("4FUN Schools") in various European countries

4

Guarantee long term technical and economic viability

- development of a sustainable business model based on detailed market research.



The MERLIN-Expo tool contains a library of models for exposure assessment that can be combined allowing to:

build complex scenarios involving several pollution sources

- take into account exposure through multiple pathways
- perform advanced sensitivity and uncertainty analyses
- conduct exposure assessments for different human populations over a wide range of time periods (e.g. lifetime, specific windows of sensitivity, short/long period)
- couple environmental multimedia and pharmacokinetic models to link concentrations in environmental media to internal dose in the target tissues.

The tool is based on a matrix that allows combining and connecting the models in a flexible way. The user can build scenarios to get the final outcome and exposure assessment.

The launching of the MERLIN-Expo tool will be a process of standardisation with different phases: validation of the models, benchmarking, improvement and adaption of the tool, drawing up of a comprehensive and transparent documentation, demonstration using realistic case studies, and distribution.

Open partnership: The MERLIN-Expo tool offers the possibility to embed new industrial partners in the future: if you want to take part to this challenging development, please contact us to define the best way to contribute to the project.

Consortium





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