ISES Europe working group
«Exposure Models»
Chair: t.b.d.

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Brief working group description

The Exposure Models Working Group, established under the auspices of the International Society of Exposure Science, European Chapter (ISES Europe), has the overarching aim to establish within the exposure science scientific and regulatory community a common understanding of use, documentation, validity and limitations of the models and tools for exposure assessment. This working group addresses the need to have guidance to enhance transparency of choices made in the selection of models, tools and exposure-related input data, and to better understanding the quality aspects of model results, since these issues were expressed by multiple actors in the field of exposure science during the first European exposure science strategy workshop (19th – 20th June 2018 at BAuA Dortmund Germany, see http://ises-europe.org/workshop.html).

An analysis of strengths, weaknesses, opportunities, and threats (SWOT) and building blocks for several aspects of exposure science was developed at ISES Europe's first workshop in Dortmund. In two of the outbreak sessions (Regulatory exposure assessment and Exposure assessment and tools) it was concretely proposed to initiate a working group within ISES Europe that should address different aspects of modelling of exposure. The first goal of the exposure models working group therefore is to build a framework until 2022 that allows the creation of mechanisms to develop new models and use existing models across various domains and regulations.

As next steps towards this goal, we will take the first set of activities and milestones outlined from the Dortmund workshop as a point of departure and discuss with the working group priorities and timelines.

(potential) Working Group members (as of 2018)

Andreas Ahrens (ECHA)	confirmed
Amelie Crepet (ANSES)	contacted
Christian Delmaar (RIVM)	expressed his interest during the Workshop
Tanya Dudzina (Exxonmobil)	expressed her interest during the Workshop
Peter Fantke (DTU-MAN)	confirmed
Sandrine Fraize-Frontier (ANSES)	contacted
Bojan Gasic (SECO)	confirmed
Natalie von Goetz (ETH Zurich)	confirmed
Christian Jung (BfR)	confirmed
Dorothea Koppisch (IFA)	expressed her interest during the Workshop
Nenad Savic (IST)	confirmed
Urs Schlüter (BAuA)	confirmed
Morgane Thierry (ANSES)	contacted

Point of departure: possible short-time milestones and long-term visions
(to be discussed and prioritized at first WG meeting)

1. Develop guidance on what tool/model to use in different situations ensuring the complexity for being used in regulatory context is not too high
    a. mapping of relevant models,

   b. define applicability domains,
   c. identify/develop good modelling practice
2. Identification of (applicability) gaps and inform on needs for new data generation / model developments. Further develop models/methods for
   a. mixtures,
   b. release from articles,
   c. aggregate exposure
   d. nanomaterials
   e. oral or dermal exposure
3. Develop criteria for reliability of modelled data
   a. Scoring system for reliability of modelled data
   b. Develop methods for evaluation of models
   c. Define uncertainty factors for default values in models
4. Development of innovative methods/approaches in exposure modelling (e.g. big data, machine learning, 3D input data, artificial intelligence, neural networks etc.)
5. Develop models that link external and internal exposure
6. Develop methods to address the inter-user variability in exposure modelling
7. Detailed look on model parameters (e.g. activity, vapour pressure) and how they are coded for exposure modelling purposes. Further analysis on parameters that may have to be included in models but are still missing (e.g. turbulence).

Expected outcomes

1. Harmonized template for model documentation and reporting across and within regulations,
2. Proposal for a common framework for model acceptance across and within regulations,
3. Best practices for modelling (e.g. as a chapter for a handbook covering all aspects of exposure science),
4. Contribution to the development of tools until their regulatory readiness, including validation, user-interface, transparent documentation and user-group testing with case studies,
5. Contribution to a business model ensuring long-term maintenance of models.

Working group contact (for questions and if you want to join us): urs.schlueter@ises-europe.org