



SS07

Memorisk session on ecological modelling in support of terrestrial risk assessments

Pernille Thorbek (Syngenta, UK), Volker Grimm (Helmholtz Centre for Environmental Research – UFZ, Germany) and Wayne Munns (US EPA)

Mechanistic effects models are gaining increasing importance in ecological risk assessments of chemicals. In terrestrial risk assessments, a wide range of species with very different ecologies and life histories have to be considered. Furthermore, in terrestrial ecosystems exposure to chemicals often varies more between individuals than is the case in aquatic ecosystems. Chemical concentrations are often spatially heterogeneous and some organisms move over large areas, exposing them to varying levels of chemical stressors. Moreover, the main route of exposure often is dietary and therefore highly dependent on actual diet. Many factors have therefore to be integrated into terrestrial risk assessments, which can be difficult to achieve with traditional methods, but can be done with mechanistic effects models. They also allow addressing different protection goals, which is the organismal level for birds and mammals, the population-level for most invertebrates, and ecological function for some soil organisms. This session will show examples of how models have helped improve risk assessments. Different types of models aimed at a variety of protection goals will be presented, e.g., body burden models (aka TK/TD), population models, and population viability analysis. The models will cover the major taxonomic groups considered in terrestrial risk assessment (i.e., birds, mammals, arthropods, and soil organisms). This session is an initiative of the SETAC Europe Advisory Group on Mechanistic Effects Models for Risk Assessment (MeMoRisk) in co-operation with the Global Ecological Risk Assessment Advisory Group.

16:00	Matthias Becher	The decline of the honeybee: a modelling approach
16:20	John Stark	Using Population Models to Determine the Impact of Herbicides on Lange's Metalmark Butterflies at the Antioch Dunes National Wildlife Refuge
16:40	Agnieszka Bednarska	The importance of absorption, elimination and feeding pattern: using toxicokinetics modelling to refine the risk assessment of pesticides to wildlife
17:00	Ken Dixon	Mechanistic Modeling of the Effects of Perchlorate on the Thyroid Gland and Risk to Post-natal Developing Mammals
17:20	Chris Topping	Why complexity matters: using ALMaSS for risk assessment of wildlife

17:40	Valery Forbes	Incorporating environmental complexity in assessing chemical risks for soil organisms using mechanistic effect models
18:00	Discussion (all speakers)	Using models: does improved understanding merit the increased complexity of risk assessments?