

Determining population relevance of ecotoxicological effects

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The protection goal of most environmental risk assessments is to protect populations instead of individuals of organisms (in contrast to human health assessments where the individual is the goal). This allows ecotoxicologists to accept some individual level effects as long as population stability and recruitment are not impacted. This principle should underlie all ecotoxicological testing and assessment procedures. However, in practise, conservative assumptions are made as to the likely population relevance of effects. At lower assessment tiers this is generally acceptable. Whilst at higher tiers there is an increasing need for trans-disciplinary approaches amongst eco/toxicologists, exposure scientists, ecological modellers and statisticians. This need is driven by an increasing reliance on higher tier approaches in a more complex regulatory environment. Further, mechanistic-based approaches in ecotoxicology are gaining importance. This is exemplified by the Adverse Outcome Pathways (AOP) concept and the regulation of some substances based on intrinsic properties related to the mechanism underlying the effects (i.e. endocrine disruption). Consequently, there is a much greater emphasis on generating mechanistic effects data (biomarkers, histopathology etc.). However, typically such data are not considered directly population relevant. Therefore, we require improved tools and frameworks in which to interpret mechanistic effects to ensure the 'A' in adverse is related to the protection goal at the population level. We hope this session will discuss these issues and propose ways forward for a better multi-disciplinary approach to defining and using population relevance in environmental assessments. We seek submissions in the following areas: • Defining the population relevance of effects from laboratory studies • Ecological modelling coupling mechanisms to the population level • Interpretation of endocrine disrupting effects • Adverse Outcome Pathways