

Kolloquium „Statistische Methoden in der empirischen Forschung“

Wann: 15. November 2016, 17:00 – 18:30 Uhr

Wo: Robert Koch-Institut | Nordufer 20 | 13353 Berlin (Wedding),
S41, S42, U9 Westhafen | U9, Bus 142 Amrumer Str

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Statistical modelling for an integrated approach to chemical risk assessment

The production of new data and knowledge in health risk assessment is increasing along with the emergence of new challenges. We will use several examples to demonstrate how statistics and mathematical modelling can help to handle the diversity of data and facilitate an integrated approach to chemical risk assessment. Mixtures, aggregate exposures and the processing of information from biomonitoring data will be addressed. In particular, we will explain how to use non-parametric Bayesian modelling and Nonnegative Matrix Factorization to define cluster diet and chemical mixtures from combined exposures. We will also present an approach which defines exposure as a dynamic process integrating toxicokinetic. Within this approach, biomonitoring data are included in a Bayesian hierarchical model using the ABC (Approximate Bayesian Computation) method. In addition, we will show how the proposed modelling methods can be used to handle uncertainty and variability. These methods were applied to a wide range of substances such as pesticides, metals, dioxins, furans, DL-PCBs, etc.