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PHARMACOKINETIC AND EXPOSURE MODELING OF BISPHENOL A AND ITS SUBSTITUTES

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Project Summary: Bisphenol A (BPA) has been facing stricter regulations within the last years due to its endocrine disrupting properties. BPA analogues such as the bisphenols S, F, and AF (BPS, BPF, BPAF) are increasingly used as replacements, although they were found to exert endocrine activity similar to BPA. Based on current knowledge only those bisphenols (BPs) bind to endocrine receptors that have not been metabolized before. Therefore, pharmacokinetic processes strongly influence the potency of BPs and it is important to account for the analogue-specific metabolism kinetics and partition behaviour when determining internal concentrations of BPs.
We developed physiologically based pharmacokinetic (PBPK) models for BPA, BPS, BPF, and BPAF, based on new kinetic data on hepatic and intestinal glucuronidation. We used the PBPK models to compare internal exposures of different age groups to the different BPs, with equal external exposures and realistic external exposures calculated with current concentration data and probabilistic models.

CV: Cecile Karrer is pursuing her PhD on exposure modeling since May 2015 at the Safety and Environmental Technology Group. She obtained a Diploma Degree in food chemistry at the Karlsruhe Institute of Technology (KIT) in November 2014.