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New approaches to improve risk assessment of mixtures of chemical compounds

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Classical risk assessment is typically performed for a single chemical. In the aquatic environment, organisms are however exposed to several compounds simultaneously. It is therefore crucial to develop approaches allowing risk assessment of mixture.

In a previous work, we proposed a method to evaluate the risk of similarly acting compounds using species sensitivity distribution curves and the concentration addition model. This method was applied to assess the risk assessment of pesticides in different kind of surface waters. We could for example show that the co-occurrence of triazines and phenylureas in spring in rivers may lead to a risk for the aquatic organisms. This method was also applied to some pharmaceuticals. Recently, we extended the method to account for dissimilarly acting compounds using the independent action model. It allowed us to assess the risk of herbicides measured in lake Geneva. The next step will be to validate our predictions with field observations.



Dr. Nathalie Chèvre has an education in engineering and a PhD in ecotoxicology. She has extensive experience in applied ecotoxicology, environmental risk assessment and water policy. A project, which aimed to determine new water quality criteria for mixtures of pesticides in Switzerland is conducted by her. She is currently working as senior scientist in the Faculty of Earth Sciences and Environment at the University of Lausanne. Her research focuses on the risk assessment of micropollutants issued from urban areas, mainly pharmaceuticals and biocides. She is member of the group "micropollutants" from the CIPEL (Commission pour la Protection des Eaux du Léman) and of the Swiss federal commission of Ecotoxicology.
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