

DOI: <http://doi.org/10.21698/simi.2019.ab19>

**IN-BETWEEN CHEMICAL AND ECOLOGICAL STATUS: A  
SYSTEMATIC APPROACH TO ASSESS THE ECOLOGICAL IMPACT OF  
CHEMICAL POLLUTION ON AQUATIC ECOSYSTEMS**

Ivana Teodorovic<sup>1</sup>, Andreas Focks<sup>2</sup>, Thomas Backhaus<sup>3</sup>, Werner Brack<sup>4</sup>

<sup>1</sup>University of Novi Sad Faculty of Sciences, Novi Sad, Serbia, ivana.teodorovic@dbe.uns.ac.rs

<sup>2</sup>Alterra Wageningen University and Research Centre, The Netherlands, andreas.focks@wur.nl

<sup>3</sup>University of Gothenburg, Gothenburg, Sweden, thomas.backhaus@bioenv.gu.se

<sup>4</sup>Helmholtz Centre for Environmental Research, Leipzig, Germany, werner.brack@ufz.de

**Keywords:** *ecological assessment, mixture toxicity, water pollution, WFD revision*

Although current water monitoring strategies aim to assess ecological impacts of various anthropogenic activities, approaches to establish causal links between chemical pollution and impacts on the ecological status of exposed aquatic systems are still poorly established. This is, however, crucial for developing and implementing appropriate water management strategies. In order to identify the role of chemical pollution on the ecological status of an aquatic ecosystem, a systematic approach combining four complementary Lines of Evidence (LOEs) is being suggested: (1) Component-based methods that allow a predictive mixture risk modelling, (2) Effect-based methods (3), *in situ* tests and (4) field-derived species inventories. Data from all LOEs are not always available and the information they provide is not necessarily consistent. Therefore, within the framework of recently finished EU FP 7 funded project SOLUTIONS, a systematic, robust and transparent approach to combine the information available for a given study, in order to ensure that consensual conclusions are drawn from a given dataset has been developed. This approach allows identification of critical data gaps and needs for future testing and / or options for cost effective and efficient water management. The talk will present the development of ecologically based toolbox, illustrate its implementation in specific case studies and provide recommendation for future use and further refinement.