## 1. Ecotoxicology and human toxicology: from molecules to organisms, from omics to in vivo

Keywords: aquatic and terrestrial ecotoxicology, molecular and cellular toxicology, omics, adverse outcome pathways, biomarkers, in vitro and in silico methods, QSARs

Understanding the impact of anthropogenic activities on organisms is the focus of environmental scientists. Impacts can be invoked directly by exposure to man-made substances but also indirectly via ecosystems' imbalances, such as harmful algae blooms. Classical ecotoxicological approaches are focused on apical endpoints, such as survival, growth or reproduction impairment, as used in regulatory toxicology. However, in recent years, the advance and maturity attained by mechanistic approaches, such as OMICs technologies, computational toxicology, in silico and QSAR methods, and our ever improving ability to measure sub-organismal responses and biomarkers, has opened new research horizons. In this track, in addition to sessions dealing with classic (eco)toxicology approaches, we particularly welcome innovative session proposals directed to discuss novel, state of the art research linking different biological organization endpoints. This can include molecular as well as whole-organism approaches, in order to increase our understanding of biological cascades, and potentially linking to adverse outcome pathways (AOP) derivation, ecological modelling and risk assessment. We particularly welcome sessions that focus on the link between ecotoxicological and human toxicological research.

## 2. Ecotoxicology becomes stress ecology: from populations to ecosystems and landscapes

Keywords: Multi-stress, ecosystem functioning and services, cascading effects, direct and indirect effects, ecological modeling, lab-to-field extrapolation, mesocosm and (semi)-field experiments

Assessing the effects of multiple stressors of both natural and anthropogenic origin acting on species, populations, and communities at different spatial and temporal scales is a major challenge. Ecotoxicology is increasingly becoming stress ecology, in order to account for the combined action of multiple stressors on organisms in their ecosystems. While our knowledge on direct effects of toxicants at the (sub-)individual level has increased considerably during the last years, we know little about indirect and cascading effects that might even change biotic interactions and thus community and ecosystem functioning. This session welcomes contributions addressing various questions, including (but not limited to): (i) How can we assess direct, indirect and cascading effects caused by single and combined stressors? (ii) Can we link the performance of individual organisms under single and combined stressor exposure with ecological functions at higher levels (population, community, ecosystem, landscape)? (iii) Which ecosystem functions do we need to focus on when assessing single and combined stressor effects? (iv) What types of approaches and methodologies should we focus on in the future to better understand and predict the combined effects of stressors? (v) How can ecological modeling help to increase our ability to extrapolate from lab to field and to interpret and predict stressor effects at biological organization levels above the individual level?

## 3. Environmental chemistry and exposure assessment: analysis, monitoring, fate and modeling

Keywords: environmental monitoring, analytical chemistry, fate and exposure modelling, speciation, bioavailability, biodegradation, targeted and non-targeted pollutant screening

The fate of chemicals in the environment and their bioavailability affects the risks of contaminants. Recent advances in environmental exposure assessment have been gained in both modelling and monitoring efforts and in bioavailability assessments. New and more accurate fate models have been developed, isotope based techniques are used to trace the fate of chemicals, statistical tools for interpreting

monitoring data have been improved, and advances in analytical chemistry are continuously evolving for reliable identification of an increasing number of contaminants in the environment, including their degradation products. Several issues remain in exposure assessment, e.g. incomplete recoveries of contaminants are often found, the fate of nanoparticles and microplastics is still unclear and long-term and long-range behavior of contaminants in the environment have not been widely addressed. This session track is seeking proposals for sessions that address the state-of-the-science and new scientific developments in chemical or physical methodologies to measure or model concentrations, fate and bioavailability of contaminants, including modern approaches to improve the monitoring of contaminants and to follow their (bio)degradation and fluxes in the environment. This also includes proposals devoted to a better use of monitoring data in environmental sciences and ecological and human health risk assessment. We also welcome session proposals that merge models with observations and that cross various spatial and temporal scales in the environment. Obviously, we also welcome session proposals that enable presentation and discussion of new results, methods and insights on the more conventional chemical groups including (but not limited to) plant protection products, metals, surfactants, and persistent organic pollutants (POP's).

**4. Ecological risk assessment and human health risk assessment of chemicals, mixtures and stressors and risk mitigation strategies**

Keywords: risk assessment, emerging contaminants, emerging risks, risks of natural and mixed stressors, risk assessment methodologies, remediation, bioremediation

Ecological and human health risk assessment is the process to estimate the nature and probability of adverse health effects in ecosystems and humans potentially exposed to single chemicals or mixtures and other stressors. Various methods are developed and used within risk assessment schemes that are quite specific for ecosystem health or human health. This track will therefore gather proposals for sessions that cover environmental risk assessment and mitigation strategies (including remediation), as well as human risk assessment. Particular attention will be devoted to sessions dealing with concepts and approaches that are applicable to both environmental and human health risk assessments. This track also welcomes proposals for sessions that will allow presentation and discussion about developing and applying appropriate risk assessment and remediation methods for "traditional" contaminants as well as for emerging ones (e.g. pharmaceuticals, microplastics, nanoparticles) and chemical mixtures.

**5. Life cycle assessment and foot-printing**

Keywords: life cycle assessment, life cycle inventory, life cycle impact assessment, environmental footprint, life cycle sustainability assessment, integrated assessment, impact assessment, upscaling issues, advanced modeling for sustainability assessment

Environmental policies, resource efficiency, circular economy, etc., are increasingly requesting integrated assessment methodologies and frameworks to support the decision making process both in business and policy context. The complex interactions between environmental, economic and social issues related to sustainability require holistic evaluations. By adopting life cycle thinking and life cycle assessment (LCA), the appraisal of products, systems and technologies is conducted, avoiding the shifting of burdens from one impact to the other and from one life cycle stage to another. Within this track, session proposals are welcomed focusing on the main challenges and achievements in the field of LCA with focus on data availability, quality and interoperability, advancements in life cycle impact assessment models, advanced inventory modeling techniques, uncertainties assessment and upscaling issues (when products and

technologies go from the pilot lab phase to large-scale full commercialisation), interpretation of results and complementarity of LCA with other impact assessment methodologies. In particular, we invite proposals for sessions that discuss integration of recent developments in ecotoxicology and ecological risk assessment into LCA and environmental footprinting (EF). We also welcome proposals for sessions that present and discuss principles, methodologies and case studies on environmental footprint (EF), both for products (PEF) and organisations (OEF), and the integration of life cycle approaches with resource efficiency and circular economy principles. Finally, we solicit proposals on the role that LCA and life cycle thinking can play in Responsible Research and Innovation.

**6. Environmental policy, risk management, and science communication**

Keywords: regulation, chemical legislation, regulatory chemistry and (eco)toxicology, decision making, communication tools, knowledge transfer and dissemination

This track aims to attract sessions dealing with all aspects related to hazard and risk assessment as well as risk management in the context of chemical regulation and environmental policy. Risk management can be prospective, i.e. taking decisions based on predicting effects of and exposure to chemicals in consumer products, biocides, plant protection products, cosmetics, pharmaceuticals etc., or retrospective, i.e. focusing on monitoring chemicals and mitigating their effects in the environment (fresh or marine waters, soil etc.). The track aims to bring together scientists from academic research, industry, regulatory authorities and policy makers, in a platform for joint discussions. Topics which may be viewed as controversial, and which help to foster the knowledge transfer between the different groups, or which present tools and approaches (laboratory, field studies, modelling) delivering solutions for regulatory risk assessment and management are especially welcome. Sessions linking assessment of chemicals and other stressors to social and economic impacts in regulatory decision-making are also welcome. An area often underestimated is a success communication to various stakeholders (including the general public) of positive findings from environmental research regarding environmental risk assessment, which can support environmental policy and the public in forming scientifically valid perceptions of hazards and facilitates implementation of suitable risk management measures. This track thus also seeks session proposals on discussion and dissemination strategies and tools for effective science and risk communication.

**7. Think-outside-the-box (fundamentally new concepts, innovative/controversial ideas, interdisciplinary issues)**

Under this unconventional session track, we welcome session proposals that stimulate thinking-outside-the-box, including the stimulation of trans-disciplinary collaboration to improve environmental quality. Possible examples are: (i) explore science-based links between ecotoxicological effects or ecological risk predictions and societal impact or values, (ii) stimulate long-term thinking in risk assessment (e.g. evolutionary and trans-generational effects; emerging concerns >20 years from now), (iii) discuss the role of SETAC and environmental risk assessment and management chemicals in the context of climate change and climate adaptation, (iv) discuss opportunities for green chemical design using predictive (eco)toxicology, exposure modeling, and life cycle assessment, (v) how a better cooperation among human sciences, economics and environmental sciences can be achieved to address ethic and sustainability aspects. Obviously, the above list of examples is meant to serve as a list of examples and nothing more. As the track title suggests, we very much welcome submission of proposals on subjects that think-outside-the-box but are not explicitly mentioned in this list. All session proposals will be evaluated for their suitability by checking against the overall mission of SETAC.