

## BOOKS REVIEW



### Ecotoxicology

Edited by  
**Elisabeth Gross and Jeanne Garric**

*New Challenges and New Approaches*

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### ECOTOXICOLOGY, NEW CHALLENGES AND NEW APPROACHES

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Ecotoxicology is a relatively young field resulting initially from a series of studies concerning pollution accidents affecting humans and the environment in the 1950s. At the same times, there was the birth of the concept of chemical ecology. Both fields have a somewhat different focus, yet they have more in common than just the prefix "eco". Both look at the impact of compounds on organisms; while ecotoxicology focuses mainly on anthropogenic pollutants, chemical ecology concentrates on natural metabolites produced by certain species and affecting others.

The main idea behind the book, which consists of 6 chapters by different authors, is to highlight current challenges and emerging approaches in ecotoxicology. One of the most important challenges is the better inclusion of

chemical ecology in ecotoxicology.

The individual chapters are diverse in their focus on different aspects, but they all aim to highlight the complexity of situations under which pollutants act at different levels of organisms in our ecosystems.

The book starts with a broad introduction to the different as well as complementary views of the fields of chemical ecology and ecotoxicology, both developed as independent research fields since the late 1950s. The first chapter continues with the following topics: the chemical ecology of aquatic and terrestrial habitats; the impact of selected pollutants on allelochemical interactions; the current knowledge in the chemical ecology of natural biocides; the use of chemical ecology response factors as alternate endpoints in ecotoxicology

The second chapter outlines the different questions of intra- and interspecific variability of tolerance, or cross-tolerance to pollutants. The ability of many different aquatic organisms to cope with the chemical stress resulting from many different toxic contaminants is here discussed. Besides, substantial developments are analysed, considering the mechanisms responsible for such tolerance as well as the ecological consequences, including operational aspects for environmental risk assessments and biomonitoring.

In the third chapter, it is shown how cyanobacterial toxins and selected pollutants differentially affect native and alien mussels.

In the fourth chapter, the authors provide a detailed overview of the interaction of individual and co-infections by parasites with pollutant effects on aquatic organisms. Here, the parasites are introduced as confounding factors that can influence the uptake, retention and bioaccumulation of contaminants and biomarker responses. Thus, the interaction between chemical stressors and parasites could have serious implications for environmental monitoring studies.

In the fifth chapter, the book presents an overview of the distribution, fate and behaviour of microplastics in the aquatic environment, and the interactions as well as the potential toxicity of plastic particles towards the aquatic biota through laboratory and field studies.

In the sixth chapter, "Omics" technologies, such as genomics, transcriptomics, proteomics and metabolomics, are presented. These techniques can offer a better view of the mechanisms of toxicity of certain pollutants, and provide an overview of the effects on physiological processes that are affected.

In summary, there is a wealth of information within the covers of this book on how new approaches can be ap-



plied to better investigate the effects of pollutants in the ecosystem. I am personally convinced that the reading of the book will instil in the reader a different point of view on facing the field of potential environmental pollution from waste treatment plants. Therefore, the book represents a useful reference for professionals (researchers, managers, engineers) working into this field.

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