

Special Issue

Microbial Systems for Enhanced Degradation of Recalcitrant Organic Pollutants

Message from the Guest Editor

Recalcitrant organic pollutants, such as pesticide residues, aromatic hydrocarbons, and halogenated compounds, pose long-term environmental risks because of their chemical stability, persistence, and toxicity to microorganisms and higher organisms.

Microbial degradation constitutes a fundamental natural pathway for the transformation and detoxification of these contaminants and provides a valuable framework for exploring pollutant–microbe interactions. Research has evolved from studies of individual degraders to investigations of complex microbial consortia, revealing how pollutant toxicity shapes microbial community structure, metabolic regulation, and adaptive responses. Within microbial assemblages, interspecies interactions—such as metabolic cooperation, cross-feeding, and collective detoxification—play a critical role in enhancing degradation efficiency and maintaining functional stability under toxic stress. Compared with physicochemical approaches, microbially mediated processes are closely related to ecological functioning and biogeochemical cycling, offering insights into the links between contaminant fate and microbial ecology.

Guest Editor

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Message from the Editor-in-Chief

Toxics (ISSN 2305-6304) is an international, peer-reviewed, open access journal which provides an advanced forum for studies related to all aspects of toxic chemicals and materials. We aim to publish high quality work that furthers our understanding of the exposure, effects, and risks of chemicals and materials in humans and the natural environment as well as approaches to assess and/or manage the toxicological and ecotoxicological risks of chemicals and materials. Please consider publishing in *Toxics* when preparing your next paper.

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