

Eco-toxicology in coastal and marine systems

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Marine ecosystems face unprecedented threat of marine pollution and anthropogenic activities. Contamination of toxic pollutants is ubiquitous in coastal ecosystems worldwide. Pollutant influences have changed and will continue to change on time scales of decades and beyond. Environmental exposure of toxic pollutants in marine ecosystems is species-specific and determined by how the species is exposed to different environmental media and the geochemistry of individual pollutants within ecosystem compartments.

Antifouling chemicals, especially tributyltin (TBT) compound, is a possible most toxic chemical deliberately introduced in the marine ecosystems. TBT was mainly introduced in the aquatic environment as a key ingredient in antifouling paints. A prohibition of the use of organotin compounds as active ingredient in anti-fouling systems in ships by the IMO was effective by 2008 in most industrialized countries. Paint manufactures have developed new compounds known as booster biocides (such as diuron and Irgarol-1051) to replace the usage of TBT in antifouling paints. Numerous studies have reported the occurrence of antifouling compounds such as TBT, diuron and Irgarol 1051 in marine environments. To date, very little is known on the adverse effects of antifouling compounds in coral reefs ecosystems. While the levels reported in various regions have reached the threshold levels for survival of corals over a short term exposure, the consequences that might be caused by chronic exposure of the environmental relevance concentrations of these chemicals in coral reef ecosystems remains uncertain.

This presentation is mainly focused on levels, behaviour and effects of toxic chemicals such as TBT, diuron and Irgarol 1051 on coastal areas including coral reefs ecosystems. This paper provides a fingerprint of the effects and consequences of anthropogenic activities in coastal ecosystems and allied resources.

Keywords:

Coral reefs, carbon production, stress, antifouling compounds.