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TBT pollution - Historical evolution and future perspectives

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Concern about organotin (OT) pollution increased strongly since the mid 1960s due to the global use of tributyltin (TBT) as a biocide in antifouling systems (AFS). TBT pollution caused several harmful effects on non-target aquatic organisms. Consequently, in the European Union (EU) TBT-AFS were banned from ship hulls between 2003-2008 (Regulation 782/2003) and a global ban was implemented in 2008 by IMO (AFS Convention). This work describes the recovery of the marine ecosystems in Portugal following the bans. Based on chemical monitoring and biological monitoring (imposex/intersex assessment), we show that the ecological status of the surface waters along the portuguese coast improved since 1998 and achieved a Good Ecological Status in 2015 for most of the sites surveyed, thus generally meeting the Water Framework Directive (WFD) objectives. However, some areas, especially fishing ports and marinas, still register high levels of TBT pollution, which demands an action as required by the WFD. Although fresh inputs due to the illegal use of TBT-AFP may occur and must be inspected, the main source seems to be the sediments. As sediments act as a long-term sink of TBT and represent a secondary source of pollution, new methods for pollution control must target this compartment cleanup. These include: (i) mapping TBT levels in sediments by chemical methods and evaluate bioavailability by specific bioassays; (ii) localization of "hotspots"; (iii) removal of the dredged material; (iv) decontamination of sediments by physical/biological processes. Following sediment dredging operations, monitoring must continue to assess the effectiveness of the cleanup action.

Biography

Carlos Barroso completed his PhD in Biology at the University of Aveiro (Portugal). He is a Professor in the Department of Biology of the University of Aveiro and is the Director of the Master Course in Toxicology and Ecotoxicology in the same university. He has published approximately 60 papers in reputed journals regarding marine biology and pollution.

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