7th International Conference of Multidisciplinary Approaches (iCMA), 2020
Faculty of Graduate Studies,
University of Sri Jayewardenepura,
Sri Lanka.
ISSN: 2386 – 1509

ASSESSMENT OF TRIBUTYLTIN CONTAMINATION IN MARINE SEDIMENTS AND BIOTA (*Perna viridis*) IN COASTAL BELT OF SRI LANKA

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Abstract

Tributyltin is a toxic organotin compound that belongs to the group of Persistent Organic Pollutants (POPs) and one of the active ingredients in antifouling paints in boats and ships. It has a long half-life in marine sediment (>5 years) and having a high specific gravity of 1.2 KgL-1 at 20 0C. Thus, the TBT contaminated sediment could act as a long-term source of TBT contamination in benthic animals and it has been documented to cause severe sexual disorders such as imposex development in aquatic fauna. The present study was aimed to quantify TBT in sediment and biological samples collected from adjacent coastal waters of commercial and fishery harbors in Sri Lanka. TBT was quantified by using Gas Chromatography Mass Spectrometry with Solid Phase Micro Extraction. The extraction recoveries of sediment and biological samples were recorded as 78±1.7% and 81±2.6% respectively. The TBT concentration in coastal sediment samples ranged from 107± 4.1 ngKg-1 to 17± 1.4 ngKg-1 wherein TBT in biological samples (Perna viridis) ranged from 4±1.2 ngKg-1 to 42±2.2 ngKg-1 in wet weigh following ascending order of the body weight. The highest TBT level in sediment was found in the Colombo port where the highest level of TBT in P. viridis (42±2.2 ngKg-1) was recorded from the Dikovita fishery harbor. A positive correlation between the percentage of P. viridis male and TBT level in sediment ($p<0.05$) suggests possible imposex development in aquatic animals exposed continuously to a high concentration of TBT directly effect on collapse of aquatic biodiversity.

Keywords: Tributyltin (TBT), Harbors, Sediment, Perna viridis, Imposex