Determination of Tributyltin in Sediments from the Machu and Taiwan Coastal Areas

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ABSTRACT

The extremely high TBT content (as high as 2500 ng/g, dry weight) found in sediments from the dumpsites of dredged materials from Keelung Harbor and the second highest value (840 ng/g) from the Keelung Harbor near the China Ship Building Company clearly indicate the sources of TBT pollution. Among the Machu coastal sediments, a high TBT value (624 ng/g) was obtained at Fu-Au Harbor. For the sediments collected from the areas of copper recycling operations (Erhjin estuary) and the outlet from nuclear power plants (Chinshan), the TBT content is below the detection limit of the method. This suggests that the existence of green oysters (Crassostrea gigas) along the Erhjin Chi estuary and skeletal deformities in fish (Terapon jarbua and Liza macrolepis) along the Chinshan coastal areas are not caused by TBT pollution.

(Key words: Tributyltin, Harbors, Dumpsites, Taiwan and Machu coastal sediments)

INTRODUCTION

Tributyltin, which is used as an antifouling agent in paints for ships, boats and fishing nets, is highly toxic to various aquatic organisms at very low concentrations (Wilkan et al., 1994; Spooner et al., 1991; Bryan et al., 1986; Beaumont and Newman, 1986). It has become an increasingly serious marine pollution problem in coastal areas (Kannan et al., 1995; Salazer et al., 1991; Chagot et al., 1990; Wade et al., 1988).

In recent decades, many investigators have analyzed TBT in water, sediments and organisms using various methods, such as graphite furnace-atomic absorption spectrophotometry (McKie, 1987), liquid chromatography (Yu and Arakawa, 1983), supercritical fluid extraction (Cai et al., 1994), and gas chromatography (Siu et al., 1989). However, there have been few studies analyzing the Machu and Taiwan coastal sediments. The purposes of this paper are to describe

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