

# **TREND OF BUTYLTIN CONTAMINATION IN THE AGE-DATED SEDIMENT CORES FROM THE COASTAL ENVIRONMENT OF KOREA**

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In the present study, butyltin compounds in sediment cores were quantitatively determined to study vertical distribution of these compounds along the coast of Korea. Butyltins in sediment core were analyzed to investigate the trend of past organotin contamination in Korea and to estimate the half-life of TBT in sediments. Butyltin compounds were detected from the entire sediment core samples at 14 stations. TBT, and its degradation products, dibutyltin (DBT) and monobutyltin (MBT), concentrations ranged <1 - 46100, <1 - 4320 and <2 - 2460 ng Sn/g on a dry weight basis, respectively. The highest butyltin concentrations were found in front of the repairing shipyard in Ulsan Bay at which total butyltin concentration reached up to 51620 ng Sn/g. Each butyltin compound showed significant correlation among tri-, di- and mono-substituted compounds.

Sedimentation rates were estimated based on  $^{210}\text{Pb}$  activity profiles. The half-lives of TBT in eight undisturbed sediment cores were calculated from the estimated sediment age and TBT concentration profiles. The half-lives for TBT ranged from 1.8 to 9.9 years and the mean value was 4.9 year. Relatively longer half-lives were obtained from cores UL3 (9.9 yr), KM (8.3 yr) and DD (6.3 yr). The half-lives of the other cores were less than 5 yr. Butyltin concentrations were high enough to affect marine organisms near harbor and shipyard, and vertical distribution of butyltin compounds in sediment showed active use of them in Korean peninsula for the past decades. The half-lives of TBT in a year scale provide a concern on persistence of this compound in marine sediment even after world-wide total ban on use of TBT.