

Distribution of total mercury in the surface sediments of ocean dump sites in Korea

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Total mercury (THg) concentrations were determined in 209 surface sediment samples of three ocean dumping sites (East Sea-Byung, East Sea-Jung and Yellow Sea-Byung) in Korea. The accumulation levels and potential environmental risk of THg were evaluated in study areas. The concentrations of THg ranged from 0.02 to 2.86 mg kg⁻¹ in East Sea-Byung, from 0.004 to 0.12 mg kg⁻¹ in East Sea-Jung and from 0.02 to 0.35 mg kg⁻¹ in Yellow Sea-Byung. The enrichment factors (EF) of THg normalized to crustal abundance varied 0.4–61.0, 0.1–2.6, 0.2–5.5 in East Sea-Byung, East Sea-Jung and Yellow Sea-Byung, respectively. Compared to each dumping sites, the percentage of sediment samples EF value was higher than 1.5 in 75.7% of the East Sea-Byung, 23.4% of the East Sea-Jung and 19.6% of the Yellow Sea-Byung samples.

Potential ecotoxicological effects by THg contamination were evaluated through the comparison with the sediment quality guidelines developed by US NOAA (Long et al., 1995). Among the total sediment samples, the percentage of sediment samples exceeding the effects-range-median (ERM) was 5.3% and 13.4% of the sediment samples were between the effects-range-low (ERL) and ERM values, and most sediment samples (81.3%) were below ERL values.

No significant correlations were found between THg and organic matter and particle size, suggesting that the distribution of THg is not fully controlled by these variables.