Baseline concentration of metals in coastal surface sediments around Korea

CHAN-KOOK KIM[1] AND JONG-HYEON LEE[1]

[1]Institute of Enviornmental Protection and Safety, NeoEnBiz, Bucheon, 420-806, Korea

The purpose of this study is to suggest baseline concentration of metals in coastal surface sediments around Korea. For this, total concentrations of eight metals(As, Cd, Cr, Cu, Hg, Ni, Pb, Zn) and other elements (Al, Fe, Cs, Fe etc) in surface sediments were determined for more than 1102 samples collected from 1989 to 2012. Total concentrations of metals were generally controlled by the grain size of sediments. But many samples showed higher concentrations than those expected from the relationship with sediment grain size, and could therefore be thought to be outliers. By using screening method combing the least absolute value method with enrichment factor, these outlier, the samples suspected of receiving any anthropogenic input, were removed from dataset for baseline concentrations of metal. Mean concentrations of relatively constant metal profiles observed in lower sections of the sediment cores from coastal area were used to be denominator for regional enrichment factor. By using relationship with conservative elements from the selected metal dataset, conservative element-metal regression formula established. This screening method and conservative element-normalized method allowed to derivate baseline concentration of metals in coastal surface sediment.