The national baseline concentration of metals in surface sediments of freshwater lakes in Korea

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This study was conducted in oreder to get the national baseline concentration of metals in surface sediments of from artificial freshwater lakes in Korea. A total of 282 sediment samples from 52 lakes in four major watersheds for eight metals (As, Cd, Cu, Cr, Ni, Hg, Pb, Zn) and conservative element (Li) were taken and analyzed to know metal levels using the total digestion technique and ICP-MS and ICP-OES. The median (5th ~ 95th) concentration levels of metals were 14 (5.0~28) mg/kg for As, 0.30 (0.08~0.60) mg/kg for Cd, 65 (31~110) mg/kg for Cr, 29 (10~55) mg/kg for Cu, 0.058 (0.015~0.18) mg/kg for Hg, 30 (13~54) mg/kg for Ni, 38 (23~65) mg/kg for Pb, 120 (57~190) mg/kg for Zn, and 48 (23~73) mg/kg for Li. National baseline concentraion for metals in sediment were estimated from the 95th percentile value of Li(48 mg/kg)-normalized concentration of metals from the regression lines between eight metals by each lake and normalizer through a pivot point, which is the concentration of both elements in pure sand fraction, by each major watershed. According to this approach, the baseline concentration of Li-normalized metals in lake sediment were 29, 0.38, 94, 47, 46, 0.095, 58 and 170 mg/kg for As, Cd, Cr, Cu, Ni, Hg, Pb, and Zn, respectivley.