Phthalates Concentration in Anzali Wetland Sediments, Iran

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Abstract

Phthalic acid Esters (PAEs) are used as softeners in plastics industry. These compounds are now considered as ubiquitous, hard degradable and dangerous environmental contaminants. Anzali wetland has international importance that many rivers and untreated urban and industrial wastewater enter it. The aim of this research was to evaluate six kinds of phthalates including dibutyl Phthalate (DBP), diisobutyl Phthalate (DIBP), diethyl Phthalate (DEP), and dimethyl Phthalate (DMP) in sediments of the wetland. The sediment samples were taken from 22 stations with three replicates in each station in July 2015. Phthalates were separated from sediments through dispersive liquid-liquid micro extraction (DLLME) method and their measurement was performed by gas chromatography equipped with mass spectrometer. The results showed that the most polluted station is located in western part that is Nahang Roga (station 13) with total concentration of six phthalic acid esters, 20.33 mg kg^{-1} and the cleanest part is Siahdarvishan (station 21) in the southeastern part with an average concentration of phthalic acid ester 0.69 mg kg^{-1}. The greatest concentration of phthalic acid esters including DEHP, BBP, DBP, DIBP, DEP, and DMP were 13.49, 0.23, 3.55, 3.19, 0.02 and 0.02 mg kg^{-1}, respectively. Total concentrations of phthalates in all stations determined by calculating the amount of phthalates in sediments and the average of all stations was 4.87 mg kg^{-1} which is more than USEPA and China standard.

Keywords: Anzali wetland, Phthalates, Pollution, Sediments.