



PCB Concentrations in Bottom Sediment Samples From Izmit Bay

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In the aquatic environment PCBs tend to accumulate in sediments and biota because of their hydrophobic character and consequently low solubility in water. Many aquatic organisms may be exposed to chemical substances through their immediate interactions with bottom sediments. The need to identify individual PCB congeners in environmental and biological matrices results from the fact that they are characterized by very different levels of toxicity.

Izmit Bay is a semi enclosed region located at the southeast of the Sea of Marmara, which is one of the most polluted regions of Turkey. Because of heavy industrialization, rapid increase in population, heavy marine and land traffic and other factors, Izmit Bay is cut out for this study to define PCB levels. Kocaeli has 75 industrial companies among the biggest 500 companies of Turkey.

PCB concentrations were determined in sediment samples collected from Izmit Bay. Samples were collected using a grab sampler from three different basins of the bay as eastern, western and central among September 2008 and May 2010. Also samples were taken from varying depths and forty different locations. Samples were analyzed by gas chromatograph equipped with an electron capture detector after ultrasonic extraction. Total PCB concentrations varied between 0.35 ng.g^{-1} - 126.26 ng.g^{-1} wet wt. PCB 153, PCB 101 and PCB 170 were the dominant congeners totally as 10.22 ng.g^{-1} , 8.77 ng.g^{-1} and 7.35 ng.g^{-1} . The highest PCB levels were measured in the locations on central side of the bay, near a petroleum refinery, metallurgical industry, liquid and solid load ports. On the other hand the lowest levels were obtained on the west side of the bay which provides the linkage between the bay and Sea of Marmara. It can be attributed that owing to permanent water circulation, PCB accumulation is lower in the west side of the bay.

Key words: PCBs, sediment, İzmit Bay, Sea of Marmara, pollution