

Dmitruk, U., Piaścik, M., Dojlido, J., Taboryska, B. Sorption and Desorption of Hazardous Organic Substances in the Water/Bottom Sediment System. *Ochrona Srodowiska* 2008, Vol. 30, No. 3, pp. 21–25.

Abstract: Sorption of organic pollutants in riverine water by bottom sediments accounts for their accumulation inside the bottom sediments while desorption of those pollutants from the bottom sediments can become a contributing factor in the recontamination of riverine water. The aim of the study was to examine the dynamics of the process of organic compound sorption (organochlorine pesticides, chlorophenols, polychlorinated biphenyls), using water-bottom sediments samples collected from the river Vistula downstream of Cracow. The experiments involved three stages. At the first one the bottom sediments samples were shaken with riverine and distilled water for 12 weeks, the contents of particular compounds in the water and in the bottom sediments were determined and their coefficients of accumulation were calculated. At the second stage the river water samples (with and without HgCl_2 addition) were shaken for seven days in order to test the stability of the compounds examined. At the third stage the water-bottom sediments samples were added standard solutions of DDT, PCB and chlorophenols, and the sorption process was observed for seven days. The experimental results have revealed the following: the sorption of the compounds on the bottom sediments proceeded at the fastest rate during the first days of contact between bottom sediments and water and then stabilized; the stability of chlorophenols and their propensity to accumulation in the bottom sediments were lower as compared to those of organochlorine pesticides and PCB; no significant changes were observed in the concentrations of the compounds in the bottom sediments even when they were washed out into distilled water. This substantiates the strong hydrophobic interrelations between those substances and the bottom sediments. It can be concluded that if the bottom sediments are in contact with the river water under conditions of bottom sediments mixing (*e.g.* during flood), the penetration of those hazardous compounds into the water will be limited.

Keywords: Bottom sediments, hazardous organic compounds, organochlorine pesticides, chlorophenols, polychlorinated biphenyls (PCBs), sorption, desorption.