



Polychlorinated biphenyls in Bucharest urban soils

Mihaela PREDA - National and Development Institute for Soil Science, Agrochemistry and
Environmental Protection

Radu LĂCĂTUȘU - Universitatea "Alexandru Ioan Cuza", Iași

Mihail DUMITRU, Dumitru Marian MOTELICĂ, Nicoleta VRÎNCEANU, Veronica TĂNASE -
National and Development Institute for Soil Science, Agrochemistry and Environmental Protection

Polychlorinated biphenyls are a family of 209 congeners that were manufactured and sold as complex mixtures differing in their chlorination level. They have excellent dielectric properties, chemical and thermal stability, so they were used extensively in industry. PCBs are very persistent, very toxic, and the high octanol/water partition coefficient results in their accumulation in fatty tissues and their biomagnification in the food chain. These are the reasons of including polychlorinated biphenyls on the Persistent Organic Pollutants list adopted in Stockholm in 2001. This paper presents the PCBs (28, 52, 101, 138, 153, 180) load level of Bucharest soils. The samples were collected from representative areas such as parks, streets, intersections, markets. The interest compounds were extracted from soil with organic solvents and analyzed by gas chromatography with electron capture detector. The analytical results show that the most abundant compounds were those with a high degree of chlorination. Thus, for PCB 180, 90% from analyzed samples have concentrations ranged between normal values (< 0.0004 mg/kg) and alert threshold (0.01 mg/kg), 7% between alert and intervention threshold (0.04 mg/kg), while only 3% exceed the intervention threshold. For PCB 153, again, 90% of the values are within the interval normal range – alert threshold and 10% correspond to the interval alert threshold – intervention threshold. For PCB 138, 23% from soil samples have normal concentration, 70% exceed the normal values but are lower than alert threshold, while 7% exceed the alert threshold. The highest concentration value, 0.0542 mg/kg, was recorded for PCB 180 in a sample collected close by a very busy boulevard.