

# Pollutants in urban stormwater runoff – studied by analysis of catch basin sediments

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Stormwater runoff sediments from 68 small catch basins around the harbor in Bergen, Norway, were sampled and the concentrations of polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), heavy metals, and total organic carbon (TOC) were determined in addition to grain size. This study is the first attempt to provide empirical data on the active transport of pollutants from land-based sources in an urban area toward the marine environment. The results of the analyses clearly demonstrate the importance of the urban environment representing a variety of contamination sources, and that stormwater runoff is an important dispersion mechanism of toxic pollutants. The concentrations of different pollutants in the studied urban runoff sediments show that there are several active pollution sources supplying the runoff systems with PCBs, PAHs and heavy metals such as lead (Pb), zinc (Zn) and cadmium (Cd). The concentration of PCB<sub>7</sub> in the urban runoff sediments ranged between <0.0004 – 0.704 mg/kg. For PAH-16, the concentration range was <0.2 – 80 mg/kg, whereas the maximum concentrations of Pb, Zn and Cd were 675, 4670 and 11.1 mg/kg respectively. Grain size distribution in 21 selected samples varied from a median particle diameter of 13 to 646 µm. However, several samples had very fine-grained particles even up to the 90 percentile of the samples, making them available for stormwater dispersion in suspended form. The sampling approach proposed in this paper will provide environmental authorities with a useful tool to examine ongoing urban contamination of harbors and similar recipients.