Estimating load of emerging pollutants originating from urban surfaces

Máté Krisztian Kardos, Péter Budai, Adrienne Clement, and Marcell Knolmár
Budapest University of Technology and Economics, Faculty of Civil Engineering, Department of Sanitary and Environmental Engineering, Hungary (kardosmate@gmail.com)

Besides agricultural land, settlement areas are among the primary sources for diffuse contamination of surface waters. Both organic and inorganic compounds originate from wash-off of road and roof surfaces, industrial areas as well as illegal wastewater discharge.

In an 18-month measurement campaign, flow triggered composite water samples were gathered using an automatic sampler, partly in small urban creeks draining settlement areas, partly from storm water channels in 7 mid-sized to large towns (30,000 to 1,800,000 inhabitants) in Hungary. Besides the automatic samples, characteristic runoff events were manually grab-sampled, leading to a time series of the contaminants. Both types of samples were analyzed for the total amount of nutrients (N and P), heavy metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Zn) and 16 PAH forms.

In this contribution, the first results of the sample analyses are presented. The concentration of the measured contaminants is significantly higher during runoff events than in dry periods and can be linked to the amount of road and roof areas on the catchment. Flow triggered composite water samples are efficient in estimating total event load amounts, which were calculated for the pilot catchment areas.