



Test of a new passive sampler in running waters: SorbiCell

H de Jonge (1), E Karydi (2), and B Kronvang (2)

(1) SorbiSense Aps, Tjele, Denmark (hubert@sorbisense.com), (2) Department of Bioscience, Aarhus University, Bioscience, Silkeborg, Denmark (bkr@dmu.dk)

We tested the performance of a new design of passive sampler for nitrate and phosphorus sampling in streams. The passive sampler is a hydraulic conductive unit consisting of a collecting adsorbent for nitrate and phosphorus and a tracer salt that records flow volumes through the unit. The samplers were directly exposed to surface water for sampling periods of two weeks in two different streams draining smaller agricultural catchments being, respectively, dominated by coarse sandy (Oddebæk) and loamy soils (Gelbæk). The testing period lasted approximately one year. Three replicate SorbiCell's were installed horizontally at each sampling station. Simultaneously with measuring with the SorbiCell's in the streams, both grab sampling and automatic water sampling with an ISCO sampler was conducted as a reference. Automatic sampling was conducted as time-proportional composite sampling collecting a water sample every hour. In addition, we conducted controlled inter-laboratory tests and flow experiments in artificial flumes where the SorbiCells were installed in replicates at different flow regimes. During the flume and field tests, the design of the samplers was improved to match the different flow conditions of the test sites. The results of testing the passive sampler in flumes and natural streams against flow conditions in the streams will be analyzed. Moreover, the functioning of the SorbiCell against the two traditional sampling methods applied in surface monitoring programmes for measuring concentrations of different forms of nitrogen and phosphorus will be shown and discussed. The functioning of SorbiCells seems to give very different results in the two streams tested and the possible explanation for this will be discussed.