

River Sediment Sampling and Sediment Environmental Quality Standard

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Heavy metal contaminants in the aquatic environment are growing concern in most urban rivers like the Ravensbourne River, a tributary of the River Thames located in South London. The quality of most rivers is largely affected by the quality and quantity of sediments found in the environment as sediments sequester and are a major transporter of heavy metals in rivers. At present, there are no environmental quality standards (EQSs) for bed sediments or fluvial suspended sediments, and one of the major problems in establishing sediment EQSs is the identification of the suitable sediment fraction to measure – the actively transported or previously deposited sediment. The variability in sediment characteristics due to their dynamic properties, environmental condition of rivers such as pH and redox potential, and changing weather conditions such as rainfall and temperature, need to be considered during sediment sampling. Sediment samples were collected from the bed and channel of Ravensbourne River, sieved into different sediment sizes ranging from the 63µm to 1-2mm. The fractions were digested for total metal concentration for Cd, Cu, Zn, Ni and Pb using the Tessier (1979) sequential extraction method. The highest concentration of these metal were associated with the <63µm fraction, which is equivalent to the sum of metal concentration attributed to other fractions (>63µm-2mm), bed sediment also contains more metal contaminants for all metals except Cd and Pb. The project aims to investigate the effect of sediment size on sediment

metal load and to establish an appropriate sampling technique by comparing different sampling methods and strategies.

Reference

TESSIER, A., CAMPBELL, P.G.C & BISSON, M. (1979) Sequential Extraction Procedure for the Speciation of Particulate Trace Metals. *Analytical Chemistry*, 51, 844-851