

Uptake of selected metals in tissues and organs of *Clarias gariepinus* (sharptooth catfish) from the Vaal River System – Chromium, copper, iron, manganese and zinc

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Abstract

This paper discusses concentrations of 5 essential trace metals (chromium, copper, iron, manganese and zinc) in water, sediment and various fish (*C. gariepinus*) tissues. With the exception of high Zn concentrations in skin, the highest essential element metal concentrations were generally recorded in liver and gill arch tissues, followed by gill filaments and lastly skin and muscle. This general trend is in agreement with trends reported by other workers. Fe concentrations were found to be significantly higher at the Vaal Dam more often than at the Vaal Barrage. In comparison, Mn concentrations were higher at the Vaal River Barrage more often than at the Vaal Dam. No clear trends emerged with regard to differences between localities for the other metals, or between surveys/seasons for all essential trace metals examined. The likely reason for the lack of distinct trends is the amount of variability observed in tissue metal concentrations within localities and seasons in this study. Such variability is also reflected in current literature and accentuates the importance of both abiotic (e.g. physical water quality variables) and biotic (e.g. host physiological status, general biology and life history traits) factors influencing the concentrations and bioavailability of trace metals.

Keywords: Heavy metal pollution, bioaccumulation, *Clarias gariepinus*, Vaal River Barrage, Vaal Dam, chromium, copper, iron, manganese, zinc