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# RECYCLING

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## Impact of heavy metal pollution on *Procambarus clarkii* (Crustacea: Decapoda) from Egypt

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The present study was conducted to assess the accumulation of some metals (Fe, Cd, Cu, Pb, Mn, Mg, Ca and Zn) in the Nile water and sediment, at four sites (Gezyrat Al- Warrak [site I], Manial Sheeha [site II], Al- Hawamdia [site III] and Helwan [site IV], as well as in the exoskeleton, hepatopancreas, muscles and gills of the crayfish *Procambarus clarkii*, collected from the same sites. The results obtained show that the different concentrations of the metals in the Nile water were in the descending order  $Mg > Zn > Fe > Cu > Mn > Pb > Cd$ , at all studied sites. Fe and Zn concentrations were higher than the permissible limits, while the remainder metals were within the allowable levels whereas, the concentrations of metals in the sediment showed different patterns according to their abundance in water. The abundance of these metals in the sediment was in the order  $Fe > Mg > Ca > Zn > Mn > Cu > Pb > Cd$ , at sites I and II,  $Fe > Mg > Ca > Zn > Mn > Cu > Cd > Pb$ , at site III and  $Mg > Fe > Ca > Zn > Mn > Cu > Cd > Pb$ , at site IV. Metal concentrations in the sediment were higher many folds than their values in the overlaying water. The bioconcentration factor (BCF) of the metals in the exoskeleton and hepatopancreas of *P. clarkii* was in the descending order  $Fe > Mn > Cu > Mg > Zn > Ca > Cd > Pb$ . While, in the gills it was in the following arrangement  $Fe > Cu > Mn > Mg > Ca > Zn > Cd > Pb$  and in the muscles, it was as follows:  $Fe > Cu > Mn > Mg > Ca > Zn > Cd > Pb$ . The concentration of the selected metals in the crayfish muscles was lower than the international permissible levels. Relative to the allowable limits for metals in foods, there was no sufficient accumulation of any of the detected metals to indicate that no significant health hazard would result from the consumption of the muscle parts of the animal. This study suggests also that *P. clarkii* may be used as bioindicator for trace metals pollution in the freshwater systems.

### Biography

El Assal F M is Professor of Invertebrate Zoology at the Department of Zoology, Faculty of Science, Cairo University, since 1993. He is interested in the conservation of the freshwater ecosystem with regards to pollution, and biological control of snail vectors of parasitic diseases. He published more than 50 papers and planned and supervised more than 60 MSc and PhD thesis at the Cairo University.

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