

# Seasonal variation of selected heavy metals in sediment and mud crabs (*Scylla serrata*) tissues in Negombo estuary.

B.R.C. Mendis<sup>1\*</sup>, M.M.M. Najim<sup>2</sup>, and H.M.P. Kithsiri<sup>1</sup>

<sup>1</sup>National Aquatic Resources Research and Development Agency, Colombo 15, Sri Lanka.

<sup>2</sup>South Eastern University of Sri Lanka.

<sup>1</sup>chani004@yahoo.com, <sup>1</sup>palihikkaduwa@gmail.com, <sup>12</sup>vcseu@seu.ac.lk

\*Correspondence Author: [chani004@yahoo.com](mailto:chani004@yahoo.com)

## Abstract

Heavy metal pollution is of particular concern as they have deleterious effects on biota through mobilization and accumulation in various trophic levels. The objectives of this study were to assess the seasonal variations (rainy and non rainy periods) and to determine the heavy metal levels of the lead (Pb), mercury (Hg), copper (Cu), zinc (Zn) and cadmium (Cd) in sediment and edible muscle tissues in mud crabs in selected sites. Sampling was done one year period from January to December 2016. Crab samples were collected from four main locations of Negombo estuary as Pitipana, Munnakkaraya, Duwa, and Katunayake sites. The levels of Hg were analyzed by cold atomic absorption spectrophotometer, whereas the other metals were analyzed by flame furnace atomic absorption spectrophotometer. The results revealed that the monthly mean of the concentrations of metals (mgkg<sup>-1</sup>) in sediments were Pb, 1.15 ± 0.3 to 9.8 ± 3.2; Cd, 0.09 ± 0.01 to 0.36 ± 0.23; Hg, 0.14 ± 0.02 to 0.58 ± 0.4 ; Cu, 7.7 ± 2.3 to 11.3 ± 2.4 and Zn, 126.1 ± 30.5 to 154.6 ± 21.4. The result indicated that monthly mean of measured metals in the edible tissues (mgkg<sup>-1</sup>) were collected from Negombo variation ranged from Pb, 0.03 ± 0.02 to 0.07 ± 0.03; Hg, 0.2 ± 0.012 to 0.3 ± 0.23; Cu, 0.25 ± 0.12 to 0.37 ± 0.21; Zn, 2.2 ± 0.18 to 4.2 ± 0.35 and Cd, 0.02 ± 0.01 to 0.12 ± 0.11. The result revealed that mean concentration of Cd and Cu levels in crab tissues were exceeded the maximum permissible levels in food for human consumption specified by international standards limits. The seasonality in the heavy metals of sediment and crab tissue were observed with a peak periods from May/June and October/November respectively.

**Keywords:** Heavy metals, Seasonal variations, Sediment, Crab tissue