423/D

Effects of the tsunami on metal concentrations in water and sediments of Rekawa lagoon

H B Asanthi[1*] and P R T Cumaranatunga[2]

[1] *Departmennt of Limnology, Faculty of Fisheries and Marine Sicences and Technology, University of Ruhuna, Matara*

[2] *Department of Fisheries & Aquaculture, Faculty of Fisheries and Marine Sicences and Technology, University of Ruhuna, Matara*

Megathrust earthquake with a moment magnitude of 9.3, which occurred close to west coast of the Indonesian island, Sumatra, on 26th December 2004, affected the Sri Lankan coastal districts. It first hit the eastern coastline, shortly after 8.00 am and then swept along the southern and south-western shores of Sri Lanka within the next 90 minutes. In certain areas, tsunami waters were reported to be black and carrying a thick muddy sludge. In the Hambanthota (south-eastern coastal town), water was reported to be of slimy texture. Initial inference is that, marine sediments may have deposited in

coastal water bodies and on land. Rekawa lagoon has an area of 2.50 km^2 and supported the fishery, which provides fish for the consumers in the vicinity of the lagoon. Lagoon was partially damaged and the ecological and economic loss due to tsunami is quite obvious. Present study was an attempt to determine whether the tsunami has affected the metal concentrations in water and sediments of Rekawa lagoon. Samples of water and sediments were collected from the lagoon after tsunami in February 2005 and they were compared with samples collected on three occasions since January 2004 from the same sites. Metal concentrations in all samples were determined by ICP-MS (VG Plasma Quad PQ2 Turbo Plus). Concentrations of As, Sr, Zn and U in water varied significantly with the sampling occasions and there was a significant difference in the concentrations of above metals in water samples collected before and after the tsunami ($P< 0.05$). Sr and U concentrations in water were significantly different after the tsunami from other three occasions. Mean metal concentrations in sediments, especially of metals such as Mn, Co, Zn and Ba were significantly different after the tsunami from other three occasions ($P<0.05$). Concentration of As in sediment samples that were collected after the tsunami exceeded the low effect range (ERL) recommended by Australian National Oceanic and Atmospheric Administration (NOAA, 1999). Since As is a toxic metalloid, serious attention should be given to this matter.

* asanthi@fish.ruh.ac.lk Tel: 041-2227026