

E2-15 Investigation of heavy metal ion contamination in the surface water of Beira Lake and Lunawa Lagoon

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The pollution of inland waterways by toxic heavy metal ions pose a major health risk to humans and other animal and plant species that come into contact with it. The inland waterways of Colombo and suburbs are considerably polluted from the discharge of untreated industrial effluent, sewage, and storm water drainage flow-through. The concentration levels of 4 heavy metal ions in the Beira Lake and the Lunawa Lagoon were monitored over a 5 month period. The concentrations of heavy metals Zinc (Zn), Chromium (Cr), Cadmium (Cd), and Lead (Pb) were analyzed at 5 locations in the Lunawa Lagoon and at 3 locations in the Beira Lake by Atomic Absorption Spectrophotometry (*Table 1*). Flame atomization technique was used for the determination of Zn, while the graphite tube atomization technique was employed for Cd.

The investigation revealed that heavy metal ion contamination levels of Beira Lake and Lunawa Lagoon are below the limits set up by the Central Environmental Authority (CEA) for industrial wastewater, except for the concentration of lead in the months of July and October from one sampling site in the Lunawa Lagoon. Since some residents living adjacent to these water bodies also utilize water for activities such as washing and bathing, the levels of heavy metal ion pollution were also compared with the World Health Organization (WHO) drinking water standards. The comparison revealed that the level of Pb was higher than this standard in some months in both Lunawa Lagoon and Beira Lake, while the level of Zn and Cr were generally well below these standards in both water bodies.

Assistance provided by Dr S A Fernando is acknowledged.

Table 1 - Concentration* of heavy metals in Lunawa Lagoon and Beira Lake**

Location***	Zn (ppb)	*** Cr(ppb)	Cd(ppb)	Cb(ppb)
Lunawa				
S1	<100(74)	10(3)	<5(3)	51
S2	<100(75)	<10(7)	<5(3)	23
S3	<100(65)	<10(5)	<5(3)	18
S4	278	15	<5(3)	27
S5	234	10	<5(3)	21
Beira				
B3	172	<10(4)	<5(3)	<50(23)
B4	402	<10(5)	<5(4)	<50(27)
B6	<100(42)	<10(4)	<5(4)	<50(18)

* reported values have been averaged over a 5 month period

** values indicated in brackets are approximate, as they are less than the lowest standard for the metal

*** five sites in Lunawa Lagoon (S1 - S5) and 3 sites in Beira Lake (B3, B4, B6) were analyzed

**** reported values have been averaged over a 3 month period.

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