

**DETERMINATION OF HEAVY METALS IN SEDIMENTS,
FISH AND AQUATIC PLANTS FROM LAKE VICTORIA**

By

ORATA FRANCIS

B.Sc Hons. University of Nairobi

**A thesis submitted to the department of chemistry, University of
Nairobi in partial fulfillment of the degree of Master of Science in
Chemistry.**

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DECLARATION

This is my original work and has not been presented for a degree in any other university

	Signature	Date
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This thesis has been submitted for examination with our approval as

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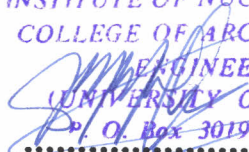
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ABSTRACT

Flame atomic absorption spectrophotometer and X-ray fluorescence technique were used to analyze cadmium, chromium, zinc, copper and lead in sediments, fish and aquatic plants from Lake Victoria. The requirements for complete digestion using different acid methods followed the American Public Health Association (APHA, 1992). A total of 110 fish, 132 sediments and 64 Plant samples were collected from various sites of lake Victoria namely; Nzoia, Kasat and Kasagam rivers, Mbita, Winam gulf and within Kisumu City. Samples investigated included fish species (*Oreochromis niloticus*, *Barbus altanialis*, *Labeo victorianus* and *clarius gariepinus*), water hyacinth and sediments. Assessment of heavy metals in the Nyalenda waste treatment ponds situated at Kisumu municipality was also done. Overall the concentrations in sediments varied from site to site and were found to be as follows; dry weight basis, 11.87 - 749.2 mgkg⁻¹ for copper, 0.50 - 1.998 mgkg⁻¹ for cadmium, 13.74 - 98.17 mgkg⁻¹ chromium, 58.79 - 453.8 mgkg⁻¹ for zinc, and 6.99 - 424.2 mgkg⁻¹ for lead. Increased concentrations were noted at certain localities suggesting anthropogenic inputs. The mean concentration values (wet weight basis) obtained in fish muscle (and scales) respectively were: 0.10 - 0.84 (0.412 - 6.11) mgkg⁻¹ for copper, ≤ 0.002 - 0.03 (0.00 - 1.608) mgkg⁻¹ for cadmium, 0.079 - 0.917 (0.16 - 3.42) mgkg⁻¹ for chromium, 0.951-41.88 (50.32 - 314.62) mgkg⁻¹ for zinc, and ≤ 0.02 - 2.97 (4.324 - 18.32) mgkg⁻¹ for Lead. Lead levels in *clarius gariepinus* from some fish samples exceeded WHO limit of 2.0 mg/kg⁻¹. The trace metal concentrations obtained in this study for sediments are higher