E - 04 **NITRATE DISTRIBUTION OF THE MID-CANAL OF KANDY—AN APPLIED GEOCHEMICAL AND ENVIRONMENTAL STUDY**

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The canal under study, termed the ' Meda-Ela ' (Mid-canal) originates from the overflow sluice of the Kandy Lake and traverses a distance of 8 km. through a highly populated area before discharging its effluents into the River Mahaweli at Getambe. The canal water was sampled from its origin to its discharge point and the NO_3^-—N and NH_4^+—N levels were monitored. NO_3^-—N was determined by the use of NO_3^- specific ion electrode and NH_4^+—N was determined spectrophotometrically using Nessler's reagent. NO_3^-—N levels ranged from 0.25—8.00 mg/l and NH_4^+—N levels ranged from 0.03-4.00 mg/l.

The canal itself carries a very large load of nitrogeneous matter mainly from human and animal excreta. Inspite of this, the NO_3^-—N and NH_4^+—N levels were low indicating the existence of nitrogen in other forms. The water from drinking water wells situated in close proximity to the canal had higher concentrations of NO_3^-—N and indicated the possibility of nitrification and migration of the newly formed NO_3^-—N through the permeable alluvium of the flood plain of the Mid-canal.

The low levels of the NO_3^-—N in the canal could be due to the existence of the nitrogeneous matter in a complex form perhaps associated with the abundant organic matter in the bottom sediments. Due to the potentiality for the conversion of these other forms of nitrogen to nitrates and due to the good permeability of the alluvium a rapid approach to nitrification of the water wells in the vicinity can be envisaged.

Excessive nitrates in drinking water cause infant methaemoglobinaemia and gastric cancer and since boiling the water only helps to concentrate the nitrates, an excessive build-up of nitrates in water wells would pose a serious health hazard to the general population in the area. This can be strongly emphasized since these contaminated water wells by the side of the Mid-canal are the major source of domestic water for many families living close to the canal. This study clearly illustrates the dangers of ground water pollution caused by the very poor human excreta disposal systems as exemplified by Kandy. Up-to-date information on ground water quality and a knowledge of potential sources and causes of contamination is necessary in the implementation of an intervention strategy for active source protection in this region.