

**GROUND WATER CONTAMINATION IN JAFFNA
RED BEDS: MAINLY FOCUSED ON NITRATE AND
TRACE ELEMENTS**

A dissertation submitted to the
Faculty of Science & Technology

Uva Wellassa University

In partial fulfillment of the requirements for the award of the
Degree of Bachelor of Science

By

DILANI PARIMALARAJAH

Mineral Resources and Technology Degree Programme

Uva Wellassa University

2014

Abstract

Consumption of water with excessive nitrate in groundwater is becoming a crucial issue on human health in Sri Lanka. On the other hand the excessive usages of nitrate and unplanned disposal of wastages are increased nitrate levels significantly in many countries, including Sri Lanka. Particularly, nitrogenous compounds in groundwater for drinking have been considered as a possible risk factor for oesophageal cancer and blue baby syndrome. Having lack of understanding on the actual need of fertilizer, farmers usually tend to apply surplus amount increasing nitrogen pollution. Accordingly, this research was conducted to deepen the understanding on distribution of nitrate in groundwater in the red bed areas in Jaffna and geological and anthropogenic influences.

Hence, groundwater quality was analysed in red bed areas in Jaffna, included the divisional secretary divisions of Uduvil, Kopay and Nallur. Seventy (70) well water samples were collected from these study area. The Ultraviolet Spectrophotometric Screening Method was used for the detection of nitrate concentrations. Other trace elements were analysed used by Atomic Absorption spectrophotometer .The red bed area was found for the most polluted groundwater by NO_3^- , ranged from (0.38-221.21) mg/L as NO_3^- .The Trace elements of Li, Cs, Sr and Cu also elevated level in study area. The trace elements of Rb,Mn, and Iron were in very low concentration. There were no any other correlations between the elements. Because the source for the contamination is anthropogenic activities In addition to that, influence of agriculture, excessive nitrate levels in groundwater is apparent irrespective to climatic zones.