

**Ground water contamination by
Fertilizer – Case study from Vavuniya**

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

SIVALINGAM VASAN

Mineral Resources and Technology Degree Program

Uva Wellassa University, Sri Lanka

2011

Abstract

Well water is an important water source which provides drinking water supply especially to dry zone of Sri Lanka. Therefore considering in the quality of groundwater is essential to ensure the health of human and other living things. However the quality of groundwater varies place to place, mainly depending on its geological origin even though, it is become deteriorated by various anthropogenic activities. Nowadays in Sri Lanka this is especially due to the extensive use of agro chemicals. In this content, this study was carried out regarding the groundwater contamination by fertilizer. The study was focused on 10Km² area encircled the paddy land associated with Vavuniya Tank. Topographic map of the study area was grasped deeply for the site visit to acquire hydrogeological features. Flow direction was roughly assumed by investigating hydrogeological features. In this area 67 well water samples were collected for the water quality analysis.

In which the well water samples were tested for the pH, Electrical Conductivity (EC), Nitrate (NO₃⁻), Phosphate (PO₄³⁻) and Potassium (K⁺). Those quality parameters were plotted on the digitized map using ARCGIS 9.3 and graphical quality variation were critically commented. Besides this illustration the results were analyzed by MINITAB 14.0. It has been found that the lower elevation part of the study shows the significant variance with nitrate concentration, pH, and EC measurements though phosphate and potassium do not show more variations. The soil composition of the highly polluted area of the low land area is sandy clay that soil property may enhance the nitrate pollution of groundwater.