

ANALYSIS OF FATE OF SEPTIC TANK LECHATES

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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. This is especially due to population increases and subsequent poor sanitary facilities by means of poorly design a toilet pit Nowadays in Sri Lanka. In this context, this study was concerned on the influence of toilet pits on the groundwater quality in Vavuniya town area. Study was focused Vavuniya urban area in which 60 wells were randomly selected and samples were obtained for the water quality analysis.

In which the well samples were tested for the nitrate (NO_3^-), Phosphate (PO_4^{3-}) and the fecal coliform count and the distance between well and toilet pits were measured. The relationship between the quality of groundwater and distance to toilet pit was analyzed on MINITAB 14.0 statistical kit. It has been found that the increased number of poorly designed toilet pits are one of the factors causing nitrate and phosphate contamination in its adjacent wells.

In the study area the nitrate concentration shows the significant variation from 1.74 to 172.75. Nearly 17% of the well are exceed the maximum permissible limit and consider as not suitable for drinking purposes. Most of the wells are under the suitable condition for drinking purposes, which have the nitrate concentration below 45 ppm; but nearly 10% of the wells are very close to the maximum permissible limit these wells have the susceptibility to exceed the maximum permissible limit in few years. Mean nitrate concentration values of this area wells is above 30.98 ppm.

The phosphate concentration not show the huge variation and most of the wells fall into the maximum permissible limit so it rarely causes the water quality problems. In Vavuniya urban area we have to take the immediate measures to prevent the further contamination. Furthermore, the nitrate concentration further increases with the number of toilet pit if the number of toilet pits high the concentration also high So that it is found that the toilet pit is one of the reasons for the nitrate contamination in well water.