

Vulnerability assessment for shallow aquifers using chemical quality of groundwater: A case study from Thirunelvely and Kondavil in Jaffna district

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Abstract

Analysis of chemical parameters of drinking water was carried out to determine the level of pollution in forty wells at monthly intervals from March 2007 to February 2008 along with three major water supply wells at Thirunelvely and Kondavil areas in Jaffna district. The total iron, phosphate, manganese, arsenic and pH of the water did not reach harmful levels. High level of nitrate-N, low level of fluoride and elevated level of alkalinity were identified as major hazards in most of the wells including the water supply wells. Wells were categorized into three aquifer vulnerability zones based on the concentration of nitrate-N and preventive and protective measures were discussed. A total of 10 wells from Thirunelvely and 16 wells from Kondavil were grouped into AVA1(Aquifer vulnerability area 1) class. AVA2 and AVA3 classes consisted of 9 and 5 wells respectively. The best management practices with strict control of chemical fertilizer application, proper maintenance of wells and provision proper distance between wells and sewage pits are recommended to rectify the contamination of nitrate-N.

Keywords

Vulnerability assessment, Shallow aquifers, Chemical quality, Groundwater

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