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Contribution of water on the prevalence of fluorosis and some suitable remedial measures

Gopalan Viswanathan
Sengunthar Engineering College, India

Water is highly vital for each and every form of life in earth. However, about 80% of the diseases in world are due to poor quality of drinking water. Furthermore, the prevalence of fluorosis is mainly due to the consumption of more fluoride through drinking water. The safe limit of fluoride in drinking water is 1.5 mg/l. All over the world, several millions of people from 22 countries are affected by various forms of fluorosis. In India, around 20 millions of people are severely affected by fluorosis and about 40 millions are expected to its risk. Hence, it is necessary to estimate the quantitative contribution of water on the prevalence of fluorosis and daily fluoride intake through drinking water and water used for processing food and beverages. Moreover, it is essential to find suitable practices to reduce daily fluoride intake level and fluorosis risk. A suitable methodology was adopted for the estimation of daily fluoride intake through drinking water and water used for food processing. The estimated daily fluoride intake ranges for the different age groups of people from various fluoride endemic areas are compared with the safe intake level of fluoride ranged between 0.05 mg/kg/day to 0.07 mg/kg/day. The rate of prevalence of fluorosis and daily fluoride intake levels significantly increases with increase of water fluoride level. More than 60% of the total fluoride intake per day is derived from water. Hence, the people residing in the fluoride endemic areas are advised to take serious concern about the fluoride level in water used for drinking and food processing.

Biography

Gopalan Viswanathan has completed his PhD from Manonmaniam Sundaranar University, Tirunelveli. Presently, he is working as Assistant Professor in Department of Chemistry, Sengunthar Engineering College, Tiruchengode. He has published 9 papers in reputed journals and has been serving as a reviewer of repute.

viswakind@gmail.com

Non invasive hydraulic conductivity estimation using microgravity: Case study

Arushi Saxena and Rambhatala G Sastry
Indian Institute of Technology Roorkee, India

Gravity estimation of hydrological parameters of unconfined aquifers exists in literature. However, similar results are not available for confined aquifers. So, our case study on our campus sets out to investigate the application of microgravity in estimation of hydraulic conductivity of a confined aquifer. An approximate 470,000 kg groundwater mass withdrawal from a 17 m thick confined aquifer, over 2.5 hours pumping interval, forms a cone of depression whose maximum gravity effect was recorded as 0.1 mGal near the pump using a Scintrex CG-5 Gravimeter. Gravity measurements were taken before, during and after pumping at various stations around the pump. The observations were inverted using L-1 norm minimization for height and radius of the cone formed just after pump is stopped. The estimated radius and height of cone were 9.6 and 5.4 m respectively. Using Thiem equation for steady state flow in confined aquifer, hydraulic conductivity was estimated as 1.7x10-4 m/sec, which is an acceptable value for the fine sand aquifer. Thus, the feasibility of micro-gravity in hydrological investigations is established.

Biography

Arushi Saxena is currently working on her Masters dissertation (2013-14) at Indian Institute of Technology, Roorkee.

rgss1fes@iitr.ac.in