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Sustainable management of groundwater

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management in endemic fluoride affected area — case
study from Southern India**

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Presence of fluoride in groundwater poses a health hazard in many semi-arid tropical parts of the world which includes India also. Andhra Pradesh state in INDIA is one of the states which have more than 7000 habitations with excess fluoride in drinking water supply based on groundwater. Several defluoridation methods have been deployed but all these high technology based treatment ended up with several constraints like inavailability of chemicals, electricity, skilled man power and improper sludge disposal treatment.

In this paper the results pertaining to a simple and replicable approach of rainwater harvesting and artificial recharge for in-situ dilution of groundwater fluoride and sustainability over a small area of ~2sq.kms in Nalgonda District of A.P. was attempted for creating safe drinking water source for fluoride endemic villages. Through hydrological and geophysical integration, suitable artificial recharge strategies were adopted and the groundwater fluoride concentration of > 3.5 mg/l over the study area was brought down to < 1.5 mg/l which is appreciably within the WHO norms for drinking water standard. The sustainability both in terms of quantity and quality over the subsequent years are being monitored before initiation of water supply to the villages.

Site suitability and proper understanding of the subsurface through an integrated approach of near surface geophysics and hydrological investigations can enable in solving the problem of excess fluoride in drinking water supply over similar geomorphological terrain.



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