

Hydrogeochemistry and Assessment of Ground Water Quality in Mahbubnagar District, Telangana State, India with Special Emphasis on Fluoride Distribution and its Impact on Health

B. Rajeswara Reddy, K. Rajesh

Department of Applied Geochemistry, Osmania University, Hyderabad- 500007, Telangana State, India

Abstract-High fluoride concentration in groundwater is a vital health problem in several regions of the world. In India about 72 million people are at risk of developing fluorosis. The prominent health related problems due to high fluoride concentration are dental caries, teeth monitoring, endemic cumulative fluorosis causing skeletal damage and deformation to children and adults. In Telangana State, India several thousands of people in 9 districts are suffering from fluorosis. Mahbubnagar is one of the districts consisting of 63 revenue mandals where many people suffering advanced skeletal and dental fluorosis.

Keeping in view of health implications due to high fluoride concentration in the study area of investigation, the assessment of water quality has been carried out in a 557.86 sq.km of Gadwal, Dharur, Itikyall, Maldakal and Aiza mandals. 45 water samples were collected representative of the post-monsoon (winter) and pre-monsoon (Summer) from open wells and bore wells and analyzed for fluoride concentration and other associated chemical parameters. Fluoride concentration in ground water samples of these places varied between 0.9 mg/l and 4.0 mg/l. 22 water samples are exceeding the permissible limit of fluoride, 1.5 mg/l. The main sources of fluoride are weathering and leaching of fluoride bearing minerals under alkaline environment. In addition, the concentration of fluoride is aided by high rate of evaporation, longer residence time of water in aquifer zone in the investigation area. The above work helps in the long run to integrate with water grid system being proposed in the district by the Government of Telangana to mitigate the drinking water crisis of the region. Further, we explored and addressed the possibilities of remedial measures in this paper.

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