

## **GEOCHEMICAL APPRAISAL OF GROUNDWATER IN FLUOROSIS AFFECTED AREAS OF ORISSA, EASTERN INDIA**

Ray, Subhransu Bhusan. Geological Survey of India, Nayapalli, Bhubaneswar-751 012, India.

Dental and skeletal fluorosis has assumed endemic proportion in many parts of Orissa due to increased consumption of groundwater by people over last 15 years. Children in the age group of 8-14 years are the worst affected. Poverty stricken population, on a low calcium intake (300-400 mg/day), is extremely prone to fluorosis. Geochemical appraisal of groundwater, in the affected areas, reveals that dwater is alkaline (pH 7.2-8.9) and has a highly variable fluoride content which shows strong relationship with lithology. Fluoride concentrations, in the Weathering of granite massifs and charnockite, in the humid tropical conditions of this part of India, results in the release of fluorine from biotite under the influence of alkaline groundwater regime. Surface water has very low fluoride levels of around 0.4 ppm which indicate negligible anthropogenic input of fluoride. Groundwater, during the post-monsoon period, registers a 15-20% drop in the fluoride content due to recharging during the monsoon. Augmenting groundwater recharge through artificial methods, use of bauxite, abundantly available locally, as a defluoridation agent, and fortification of calcium in the diet by consumption of locally available food items like ragi, drum stick leaves, and fenugreek leaves are the measures suggested for mitigation of the acute problem of fluorosis.