

3rd International Conference on Hydrology & Meteorology

September 15-16, 2014 Hyderabad International Convention Centre, India

Provision of water containing optimum amounts of fluoride in endemic areas of fluorosis

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Endemic skeletal fluorosis is a disease caused by excessive ingestion of fluoride through water or food or both. Fluoride is a bone seeking element and 96-99% of fluoride retained in the body combines with calcium phosphate moiety of bones and hence bones suffer. The disease starts with teeth, later affects the skeleton and lastly spinal cord compression ensues with severe disabilities and death. This disease is widely prevalent in India affecting 275 districts spread over 20 states. Sixty six million people living in the endemic areas are at risk of contracting the disease and six million people are crippled because of it. This disease was first detected in 1937 and it is spreading and becoming more severe in character in recent decades. It is predominantly a rural problem because 90% of rural water supplies are dependent upon ground waters which have excessive amounts of fluoride in water for a tropical country like India. In contrast most cities are free of this problem since they get their water supplies from perennial rivers which contain optimum amounts of fluoride in water. Rural malnutrition and anemia is widespread in India which aggravates fluorosis incidence. Rural nutrition has deteriorated during the past few decades due to dependence on ground waters, commercial sale of vegetables and milk to cities and towns without optimum intake by its residents especially growing children and use of fertilizers and pesticides containing fluorides. Tea drinking has become common in recent decades even in villages and tea is especially rich in fluoride which adds to the problem. In some endemic areas such as Prakasam district excessive amounts of trace elements in waters such as strontium, uranium etc aggravates fluoride toxicity. This disease can be prevented in endemic areas by providing surface waters containing less than 0.5 ppm of fluoride for drinking, cooking and for cultivation and improving nutrition. This has been proved by our studies in tribal villages of Jhabua in Madhya Pradesh. Improving nutrition with regard to optimum intake of calcium, magnesium and vitamin C will further protect the rural population from the menace of fluorosis. This is a huge task in areas such as Nalgonda district of Telangana where more than 600 villages are affected. Government efforts to provide Krishna water round the year have been a failure in this district. Defluoridation plants based on alum and activated alumina have been a failure in endemic areas. This society should find ways to overcome the problem of supplying potable water for drinking and cooking in high endemic areas of our country such as Nalgonda.

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