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Fluoride and fluorosis extension in India with special reference to Rajasthan state

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Fluorosis is a disease which is caused by excess intake of fluoride through diverse sources. Water is the main source of fluoride contents. Presence of fluoride in drinking water above permissible limits (1.5 ppm according to WHO) leads to fluorosis. Men and nature both are responsible for this disease. Fluorosis is not only a health problem but now it has become a social problem too. At least 17 Indian states including Rajasthan have been identified as having excess fluoride in drinking water. All the 33 districts in Rajasthan are endemic for fluorosis. According to WHO 20% villages out of total fluoride affected village in the world are found in India and out of total affected villages in India 52% are in Rajasthan. It is to be noted that India is not only the country but several other nations in the world are severely affected by the problem of fluorosis. Apart from India, high concentration of fluoride has been detected in the ground water in several countries including Argentina, Algeria, Australia, several African Nations, Bangladesh, and China etc. In Rajasthan, people of all districts are consuming water which has fluoride contents much greater than the permissible limits. The worst affected districts in Rajasthan are Nagaur, Jaipur, Ajmer, Sirohi, Jhunjhunu, Churu, Dungarpur, Udaipur, Sikar, and Alwar (Govindgarh). Fluoride entering the body through water is almost completely absorbed whereas fluoride ingested through food is absorbed to a much lesser extent. Ground water has more fluoride contents than surface water especially in those areas where water level is deep. As fluoride minerals are present in these areas, leaching out of fluoride from minerals contaminates water and the earth/ soil. It means human body can tolerate fluoride ions up to certain limits (1.5 ppm) depending upon the nutritional standards and body physiology. It is also a fact that there is no method presently available that would remove fluoride ions totally from drinking water. "Lesser the better" is main method.

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