Fluoride contamination in groundwater resources in the southern Iran and its related human health risks

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ABSTRACT

The occurrence of excessive fluoride levels in groundwater has to be recognized as a threat to human health. Based on fluoride concentrations in groundwater samples in the Larestan County, Iran, the health-risk assessment such as chronic daily intakes (CDI) and hazard quotient (HQ) were computed to assess the suitability of groundwater for human consumption in 2018. In 48.27% of the water samples, the level of fluoride exceeds the desirable limits of 1.5 set by WHO. The results also showed that approximately 70.6, 48.2 and 34.4% of HQ values for children, teenagers and infants in these areas were above the safety level of 1, indicating that these age groups are facing to risk of fluoride through drinking water consumption. The health risk was in the order of: children > women > men. The study provides information to the government authorities, water and sewage organizations and health professionals concerned with water supply to provide water with optimum fluoride level.

Keywords: Groundwater; Fluoride contamination; Risk assessment; Larestan, Iran

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