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Potable Water Sources, Classification, and Present Status of F, U and As in Different Parts of India †

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Abstract: Earth is popularly known as the "Blue Planet" since 71 percent of its surface is covered with water. Only 0.3 percent of water is in a direct useable form, while the remaining 99.7 percent is in the oceans (97.2 percent), glaciers (2.15 percent), and rest in soils and floating in the atmosphere. Most of the water used by humans comes from rivers. As per the report of the “National Commission for Integrated Water Resource Development”, which falls under the ministry of water resources, the water requirement by 2050 in high use scenarios is likely to be around 1,180 billion cubic meters (bcm), whereas the present-day availability is only 695bcm. In the face of this growing crisis, the National Institute of Transforming India (NITI) Aayog has developed the composite water management index (CWMI) for effective water management in different Indian states. Since water is an essential component for living organisms on Earth, its pollution is one of the critical global environmental issues today. The majority of freshwater is found underground as soil moisture and in aquifers. The inputs of significant quantities of organic and inorganic waste, sediments, surfactants, synthetic dyes, sewage, and heavy metals into all types of water bodies have been increasing substantially with rapid industrialization, population growth, agricultural activities, besides other geological and environmental changes. Some of these pollutants are destroying the water quality. To improve the water quality and remove this pollutant at present, a number of methods, including ion exchange, membrane filtration, advanced oxidation, biological degradation, photocatalytic degradation, electro-coagulation, and adsorption, are in practice. Many parts of India are suffering from a high content of Fluoride Arsenic and some specific area with uranium; therefore, there is a need for a domestic/community-based system for onsite removal of Arsenic, Fluoride, and Uranium from potable water. During this work, some of the states of arts and user-friendly technologies developed for remediation of Arsenic, Fluoride, and Uranium without disturbing potable water quality will be discussed. In addition to this, visual detection technologies developed for the detection of Fluoride and Uranium without using any instrumentation will also be described.

Keywords: potable water; chemical analysis; arsenic; fluoride and uranium.

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Conflicts of Interest

The authors declare no conflict of interest.