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Physicochemical and Heavy Metal Characterization of Drinking Waters from Rural Water Supplies (RWS) for Quality Evaluation

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ABSTRACT

Water is a significant natural resource and its quality affects the public health frequently. Drinking water is a basic need for life and also a determinant of living standards. The presence of chemical contaminants in drinking water poses a very serious health hazards. Over 80% of people with unimproved drinking water and 70% of people without improved sanitation live in rural areas. Moreover water supply has a direct impact on the economic development of any country. Supply of drinking water for all still away and even the sanitation problem has not been reduced up to the expectations. Keeping in view the present scenario, efforts are made on characterization of drinking waters from rural water supply schemes located in Mandal head quarters in West Godavari District of Andhra Pradesh for quality evaluation. Water samples from Rural Water Supply (RWS) schemes at Mandal Head Quarters Koyyalagudem and Polavaram are collected before and after treatment and characterized for physicochemical parameters viz., pH, Electrical conductivity (EC), Total Dissolved solids (TDS), Total hardness (TH), Total Alkalinity (TA), Na, K, Calcium and Magnesium, Chloride, Sulphate, Nitrate, Fluoride, Phosphate and for heavy metal ions viz., Li, Be, Al, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, As, Rb, Sr, Ag, Cd, Cs, Ba, Ti, Pb and U to evaluate the quality of drinking waters. The results indicated that the Heavy metal ion concentration are within the permissible limits while the parametric levels of pH, TDS, TH, TA, Ca^{+2}, Mg^{+2} are little on the higher side of Indian drinking water standards so that the waters become difficult to be used for drinking or domestic utility. The waters are to be treated by employing the available technologies to keep the parameters within the permissible limit and to protect the health of the public residing in the rural areas.

Keywords: Drinking water, Characterization, Parameter, Rural area, Heavy metal.