

Assessments of Drinking Water Quality and Water Treatment Process in Kalatuwawa Reservoir in Sri Lanka

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Kalatuwawa is one of the major water treatment plants which supplies water to Colombo city and its sub-urban. Raw and treated water samples were collected from the Kalatuwawa water treatment plant located at 6° 85' latitude and 80° 18' longitude. Both raw and treated water samples were analyzed ninety times within six months (15 days per months) from July to December 2016 for pH, turbidity, conductivity, color, hardness, alkalinity, aluminum, iron, manganese and ammonia. According to the experimental results, pH was in the range of 6.5-8.5 in the treated water. The conductivity values ranged from 20.5 to 34.5 $\mu\text{S cm}^{-1}$ in raw water and it was from 48.5 to 74.5 $\mu\text{S cm}^{-1}$ for treated water. The hardness value range was from 5.5 to 6.5 ppm (as CaCO_3) for raw water and from 15.5 to 25.5 ppm (as CaCO_3) for treated water. Raw water and treated water alkalinities were 7.0-8.5 ppm (as CaCO_3) and 13.0-19.5 ppm (as CaCO_3) respectively. Aluminum concentration in raw water was 0.02-0.05 ppm and it was 0.1-0.2 ppm in treated water. Ammonia concentration in raw water in Kalatuwawa varied from 0.02 to 0.09 ppm and the maximum value in treated water was 0.01 ppm. Iron concentration in raw water was 0.5-2.0 ppm and it was 0.05-0.07 ppm in treated water. Average color of the raw water was detected as 39-83 Pt/Co units and after treatment process average color indicated as zero value Pt/Co units. Average turbidity value was from 0.2 to 2.5 NTU for treated water. Experimental data revealed that treated water from Kalatuwawa reservoir is in the limits of World Health Organization (WHO) standards for drinking water parameters indicating efficient, effective and productive water treatment process.

Keywords: Kalatuwawa reservoir, water quality, water treatment, sand filters, pH value

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