Analysis of Water and Sediment in Attanagalu Oya in Sri Lanka: Pollution Levels and Effects

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The Attanagalu Oya plays a major role in national water supply since it contains four major national water supply and drainage board intakes. This study intends to investigate the water quality variation and pollution levelin Attanagalu Oya in Gampaha municipal council area.Sampling was conducted for a period of six months from November 2016 to April 2017 at nine locations situated between 7° 05' 33.8" to 7° 05' 53.1''N latitude and 79° 58' 15.6"to 79° 59' 32.5"E longitude along the main river. Both water and sediment samples in the river were collected and tested for physical and chemical parameters. Electrical conductivity (EC), pH, titratable acidity, total hardness, chemical oxygen demand (COD), and metal ions content (Fe, Pb, Cd, Ni, Mn, Cu) were analyzed in water samples. EC, pH, organic matter content and soil texture were analyzed in sediment samples. Experimental results were ascertained to find out the quality and pollution level of water and sediment by comparing with the standards levels given by the Central Environmental Authority (CEA) in Sri Lanka and World Health Organization (WHO) guidelines. According to the experimental results, average pH values of water in the river was from 7.1 to 7.6 and did not exceed the proposed ambient water quality standards for fish and aquatic life. EC values ranged from 81.9 to 91.7 μS/cm and conductivity shows a drastic increment due to dry season. Titratable acidity, total hardness and metal ions content in water samples were not in the limits of CEA and WHO standards for drinking water parameters. COD values of water samples exceeded the maximum CEA standards during the sampling period. Sediment analysis indicated that physical and chemical parameters are not in the limits of CEA standards. Therefore, this study shows that the river is polluted and the effects being significant in the urban areas.

Key words: Attanagalu Oya, water pollution, sediment analysis, pH, conductivity

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