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Assessment of Water Quality in the Main Waterbodies in Anuradhapura Town, Sri Lanka

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Abstract

Water is a valuable natural resource important for sustaining life and the environment. This priceless resource is now in danger of pollution, mainly due to the high usage of agrochemicals, urbanization, and industrialization. The quality of water has deteriorated in the water resources of Sri Lanka over time. Consumption of deteriorated water in daily life has led to serious issues with human health in many parts of the country. Hence, assessing water quality is an important thing to examine the impact on human health. Anuradhapura town in Sri Lanka is an ancient city with hundreds of sacred places and manmade tanks. These tanks are used to fulfil drinking water and other domestic water needs, for natural beauty and cooling the surrounding environment. Nuwara wewa and Thisa wewa are the two main tanks which provide water to people in Anuradhapura town. The objective of this study was to assess the important water quality parameters and to identify the major contaminants in those water sources. Water samples were collected from several points in both tanks every month of the year from January 2020 to October 2023. On-site measurements such as pH, total dissolved solids (TDS), temperature, dissolved oxygen (DO) and electrical conductivity (EC) were taken using portable multipara meter, respectively. Nitrate, Phosphate and Ammonia were analysed using spectrophotometric methods. The results were compared with Central Environmental Authority (CEA) Standards for inland waters. Some bathing places in both tanks showed increased average pH and Ammonia levels which were not within the standard value in August, September and October after the Poson festival in July and returned to normal in the rainy and paddy cultivation season starting from October. The result further revealed that the Ammonia content increased in bathing places due to human urination, and it leads to an increase in the pH levels. Since Thisa wewa and Nuwara wewa are the main drinking and domestic water sources of the majority of communities in Anuradhapura town, maintaining the tank's health is vital for the health of consumers as well as aquatic life in the catchment. Therefore, it is suggested to introduce proper methods to stop bathing in domestic and drinking water sources.

Keywords: Water quality, Thisa wewa, Nuwara wewa, Water pollution