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**EVALUATION OF WATER QUALITY OF GIRANDURUKOTTE  
WHERE CHRONIC KIDNEY DISEASE IS PREVALENT**

A PROJECT REPORT PRESENTED BY

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## EVALUATION OF WATER QUALITY OF GIRANDURUKOTTE WHERE CHRONIC KIDNEY DISEASE IS PREVALENT

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Chronic Kidney Disease (CKD) is observed to be a major health problem in the North Central region of the country. As per the available research data and data from the Ministry of Health, Anuradhapura, Medawachchiya, Dehiattakandiya and Padaviya of NCP as well as Girandurukotte of Badulla district are high prevalent areas of CKD of uncertain etiology (UE). Large number of CKD patients is seeking treatment from the regional hospitals.

Majority of population of Girandurukotte are settlers from early 1970s. Thus it is possible to hypothesize that CKD of UE could be an environmentally induced disease. Supporting this is the histological findings of the kidneys of CKD of UE indicating a toxic nephropathy. Many investigations are underway to identify a possible association or risk factor for the disease.

In this study, the drinking water sources at Girandurukotte were investigated for possible nephrotoxic agents. Different drinking water samples collected from dug wells as well as tube wells were analyzed for their  $\text{Cd}^{2+}$ ,  $\text{Cr}^{3+}$ ,  $\text{Pb}^{2+}$ ,  $\text{As}^{3+}$ ,  $\text{F}^-$  and organic substances. For the analysis of water quality, thirty drinking water samples were taken in triplicates.

According to atomic absorption measurements, water samples contained  $\text{Pb}^{2+}$  and  $\text{Cr}^{3+}$ , but the concentration of  $\text{Cd}^{2+}$  and  $\text{As}^{3+}$  in most of the samples was undetectable. Lead concentration of drinking water samples ranged between 0.000 ppm. To 0.122 ppm with a mean of 0.036 ppm (for 30 samples in triplicates), where as the  $\text{Cr}^{3+}$  concentration varied within 0.000 ppm to 0.052 ppm with a mean of 0.017 ppm. According to WHO drinking water standards, the maximum permissible level of  $\text{Pb}^{2+}$  and  $\text{Cr}^{3+}$  is 0.050 ppm.

Fluoride is another inorganic constituent contained in drinking water. The amount of fluoride content in this area ranged from 0.140 ppm to 2.000 ppm with a

mean of 0.607 ppm. According to Sri Lankan standards, the maximum permissible level of fluoride is 0.800 ppm for drinking water. Moreover, gas liquid chromatographic analysis indicated the presence of different organic compounds like pesticides (Diazinon, Dimethoate, and Chlopyrifos) contained in drinking water collected from wells in different areas of Girandurukotte.