Characterization of Dissolved Organic CarboninShallow Groundwater ofChronic Kidney Disease Affected Regions in Sri Lanka

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Abstract: Numbers of Chronic Kidney Disease patients with no identifiable cause (hereafter CKDu) are escalating in the North Central Province (NCP) of Sri Lanka. This study examined the distribution of DOC in shallow groundwater of three CKDuzones(hereafter high risk, HR; low risk, LR and no risk, NR) and a control region (CR).The interactions of DOC with calcium and magnesium ions and organic metabolites were also examined. The lowest $\left(\frac{COD_{Mn}}{DOC}\right)$value was reported in the DOC of HR water. This DOC fraction encompasses organic compounds with lowest labile C withthe highest aromaticity. In HR water, four distinct DOC fractions were identified with non-labile C associated with fulvicacids. The molecular weights of the non-labile C organic compounds ranged from 900 - 1800 Da (Molecularfraction II).In all the groundwater examined, the organic matter source is autochthonous (fluorescence index > 1.8). In the HR water,pentachlorophenol (PCP) was also detected in appreciable quantities. The factor loadings based on principal component analysis

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