

## **DISSOLVED NUTRIENTS (NO<sub>3</sub>-N AND PO<sub>4</sub>-P) AND Fe IN THE INTERSTITIAL AND OVERLYING WATERS OF TWO TROPICAL FRESHWATER LAKES IN SOUTHERN KERALA, INDIA**

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### **Abstract**

Studies on the geochemical reactions between sediments and overlying waters of freshwater systems have received considerable attention in the past few decades as these reactions impart significant changes in the quality of overlying waters. Although many studies are available in the global scientific scenario, not much effort has been made in India and practically very little information is available about Kerala, a state endowed with numerous lakes and backwaters. Here we report the level variabilities of dissolved nutrients such as NO<sub>3</sub>-N and PO<sub>4</sub>-P, and Fe in the surface, bottom and interstitial waters of the Sasthamkotta and Vellayani lakes—two important perennial freshwater sources in southern Kerala. Further the Lake Sasthamkotta, the largest fresh water lake of Kerala, is declared as a Ramsar site of international importance. NO<sub>3</sub>-N, PO<sub>4</sub>-P and Fe exhibit marked increase in the interstitial water compared to overlying waters. Among these two lake systems, the content of NO<sub>3</sub>-N is higher in the Vellayani lake than the Sasthamkotta lake, whereas the concentrations of PO<sub>4</sub>-P and Fe are marginally higher in the overlying waters of the Sasthamkotta lake. However the interstitial water samples of Vellayani lake record higher PO<sub>4</sub>-P and Fe values. Although fertilizer intensive agricultural activities around the lake systems are one of the major causative factors for the enhanced concentrations of nutrients in the overlying waters, early diagenetic release of nutrients and Fe also plays a pivotal role in enriching these hydrochemical signals in the lake systems.

**Keywords:** Geochemical reaction sediments overlying water dissolved nutrients, biogeochemical reaction, Kerala.