
The Selective Adsorption of Sodium by Clay Minerals in Lakes Pontchartrain and Maurepas, Louisiana

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Abstract: Ion exchange analyses of the clay-sized fraction of sediments in Lakes Pontchartrain and Maurepas suggest the selective adsorption of Na at the expense of Mg. The literature suggests that Mg should be preferentially adsorbed. As the chlorinity of the lake waters increases from 300 mg/l to 3250 mg/l, the percentage of exchangeable Na increases from 13· 6 to 30· 6 while the percentage of exchangeable Mg decreases from 65· 6— 36· 8. The observed exchangeable Na percentages are higher than the ones calculated from the sodium-adsorption-ratios. The difference is attributed to an increase in the Na exchange constant of the sediment and therefore an increased selectivity for Na. With an increase in chlorinity, montmorillonite increases from 47 to 61 per cent and the total of the exchangeable cations (Na, Mg, Ca, K) increases from 36 to 82 m-equiv./100 g.

Clays and Clay Minerals; June 1971 v. 19; no. 2; p. 75-81; DOI: [10.1346/CCMN.1971.0190203](https://doi.org/10.1346/CCMN.1971.0190203)
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