

Adsorption of Cadmium and Lead ions on varied calcite concentrations from estuarine water and seawater

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Laboratory experiments on the adsorption of lead and cadmium on model phases improve our knowledge on the behaviour of these metal ions in natural aquatic systems. Recently, we have investigated their adsorption on calcite, in order to explain the distribution of these ions in the waters of the calcareous Krka River Estuary (1). The adsorption data obtained can be described by the S-1 type of empirical adsorption isotherm, rather than by the Langmuir's model. These curves were clearly incomplete because the saturation of the calcite surface in the systems studied has not been reached, so that the adsorption constants could not be calculated.

In the present work the particle concentration effect on the adsorption of lead and cadmium ions from estuarine water and seawater was studied. A Coulter Counter method was used to study the change of particle size and their specific surface area with the particle concentrations in the range between and 1×10^{-5} to 1×10^{-3} kg dm⁻³. Measurements were performed in waters of different salinities, after equilibration of 24 hours. Results have clearly demonstrated that with an increase of particle concentration also increases the percentage of large particles. The indicated aggregation of the calcite particles consequently leads to a loss in the specific surface area.

Using the measured relationship between the concentration and the specific surface area of the calcite particles, the adsorption isotherms of cadmium and lead ions on calcite was reinterpreted and the values of the adsorption constants were obtained.

REFERENCES

1. KOZAR S., BILINSKI H., and BRANICA M., 1992.- Adsorption of lead and cadmium ions on calcite in estuarine waters and seawater. *Mar. Chem.* (in press).