Assessment the metals mobility in sediments of a tropical reservoir by combining attenuation concentration models and sequential extraction.

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The Juturnaíba Lake is an important tropical water reservoir, with 43 km^2 of wetland, located in north of Rio de Janeiro, Brazil. For about 30 years, the sludge generated by two Water Treatment Plants were systematically discarded in two restricted areas in the reservoir edges. These sludge are rich in Al compounds, and in direct contact with water may have been spread throughout the reservoir, affecting water and sediment quality. The aim of this work was coupling the sequential extraction and a geostatistical model, for assess the contamination of the reservoir. Sediment samples were collected in 25 different sites distributed in the reservoir. Pseudo-total trace metal contents were assessed using EPA 3051A methods. The BCR sequential extraction procedure was applied, and the quality control was accomplished by analyzing the certified reference materials (BCR 701). The metals were determination by ICP-OES. The results obtained showed that only the sediment located near sludge discharge areas presented higher Al total concentrations (67,3 gKg^{-1} and 70,3 gKg^{-1}). Also, the highest Al content in BCR phase 1 was observed near sludge area. The highest percentages of Al, Zn, Fe and Cu were found in the BCR residual phase, meaning that these metals were strongly bound to the sediments. The highest percentages of Mn was found in the BCR phase 1, results in the great mobility of this metal. Further, a geostatiscal approach is present, the attenuation of concentrations models, proposed by [1, 2], which aims to estimate metal mobility in sediment. The models showed high attenuation values only for Al, indicating that the mobility of these metals is low in the reservoir, which is in good agreement with the results obtained by BCR sequential extraction.

[1] Ribeiro, *et al.* (2013), *Marine Pollution Bulletin* **, 33**, 55 – 63. [2] Wasserman & Queiroz (2004) *Rev. Quim. Nova* **27**, 17-21.