

collected in ponds located at Embrapa farm, 19°33'23.31" S and 56°4'57.56" W in Nhecolândia Pantanal, Mato Grosso do Sul, using a PVC manual sediment sampler. The cores were sliced every 2 cm and dried at 50°C; after drying, the samples were ground and homogenized. The elements As, Ba, Ca, Ce, Co, Cr, Cs, Eu, Fe (%), Hf, K (%), La, Lu, Na, Nd, Rb, Sb, Sc, Se, Sm, Ta, Tb, Th, U, Yb, and Zn were determined ( $mg\ kg^{-1}$ ) by Instrumental Neutron Activation Analysis (INAA) and the analysis was performed in the coarse and in the fine fraction of the sediment. The samples and reference material were irradiated for 8h at the IPEN Research Reactor IEA-R1. The elements As, Ba and Fe concentrations showed higher values than those of the Upper Continental Crust, UCC, in the fine fraction of the sediment for the studied cores. For the coarse fraction only the elements As, Ba and Hf showed concentrations higher than the UCC values. The majority of the obtained results in the INAA determination for the coarse and fine fraction suggested that there is no expressive effect of the human activities in the region and this particular area until the moment.

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**BIOACCUMULATION OF POTENTIALLY TOXIC ELEMENTS IN  
FLOATING AQUATIC MACROPHYTES OF GUARAPIRANGA RESERVOIR,  
SÃO PAULO**

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Macrophytes species play a relevant role in aquatic environments once they incorporate elements that can be a suitable tool for accumulation studies, mainly when it comes to an important and strategic water supply. The main goal of this study was to establish concentration levels of As, Cd, Co, Cr, Cu, Hg, Mn, Ni, Pb, Se and Zn in four species of floating aquatic macrophytes samples at three sampling sites along the Guarapiranga Reservoir. For this purpose, five analytical techniques were tested such as Inductively Coupled Plasma Optical Emission Spectrometry (ICP OES), Inductively Coupled Plasma Mass Spectrometry (ICP MS), Graphite Furnace Atomic Absorption Spectrometry (GF AAS), Thermal Decomposition, Amalgamation, and Atomic Absorption Spectrophotometry and the multielemental characterization of this matrix was undertaken using Neutron Activation Analysis technique (NAA). The results obtained were compared to reference values for aquatic plants and most of the elements exceeded these values, especially at sampling site 01, which is located near the Embu-Guaçu River flow, the main tributary of the reservoir. In relation to comparison among sampling sites and macrophytes species, One-way Anova in Statistical Package for Social Sciences (SPSS) was performed. Output showed significant differences among sampling sites, but not for macrophytes species. Factor Analysis (FA) with Principal Components (PC) extraction method was performed on data using SPSS software. Output suggested possible common source from the As, Co, Cr, Hg, Ni, Pb and Se elements, which composed PC1. PC2 included Cd, Cu

and Zn elements and it should be noticed that Cu is frequently used as algicide in the reservoir, as CuSO<sub>4</sub>. PC3 included only Mn, suggesting distinct behavior of this element. Eventually, this work should be extended to monitoring programs.

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### ASSESSMENT OF TRACE ELEMENTS CONCENTRATION IN NICOTIANA TABACUM L., VIRGINIA VARIETY

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Tobacco plant *Nicotiana tabacum* L. is used in the manufacture of all derivate products and the chemistry composition resulting of smoking varies with the kind of tobacco leaves, how they are grown, their original region, the features of preparation and the temperature variations resulting from the incomplete combustion of tobacco. There is a lack of information about the radiological and chemistry characterization of the tobacco plant in international and mainly Brazilian literature. The objective of this study was to determine the concentration of the elements As, Ba, Br, Ca, Ce, Co, Cr, Cs, Eu, Fe, Hf, K, La, Lu, Na, Nd, Rb, Sb, Sc, Se, Sm, Ta, Tb, Th, U, Yb and Zn in the *Nicotiana tabacum* L., Virginia variety, by the Instrumental Neutron Activation Analysis (INAA) technique. The INAA was used in the Virginia variety cultivated at IPEN and the same variety cultivated in the city of Arvorezinha, Rio Grande do Sul by a regular producer. The samples cultivated in Arvorezinha were separated in soil, root, stem and leaves and the samples cultivated at IPEN were separated in substrate, root, stem and leaves. The results of rare earth elements showed a similar behavior among the plants, with higher results in soil and substrate and in the leaves. It was observed that the plants of the producers presented higher concentration of the studied elements when compared to the plants cultivated in IPEN. These higher concentrations are probably due to the addition of fertilizers to the producer's crop and also because these elements can accumulate in the soil due to many years of use, different from the substrate used in the IPEN cultivation.

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