



## **Mercury in estuarine sediments of the Manguaba and Botafogo River : A background and baseline values proposition in comparison to relatively well preserved and polluted aquatic systems under tropical countries**

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Heavy metal (HM) concentrations in estuarine sediments of the Botafogo and Manguaba river, North-eastern Brazil were investigated on basis of samples from a bottom core drill performed 4km from the mouth of the rivers. Total sediments (TS) of the sliced profiles (62 cm, Botafogo river and 87 cm, Manguaba river ) were submitted to chemical analysis (51 elements), mineralogical analysis (XRD) and statistical study, followed by stoichiometric calculations. Geochronologic determinations of  $^{210}\text{Pb}$  allowed studying the evolution of the contamination level approximately 150 year-old interval in the Botafogo river.

Mercury (Hg) and Arsenic (As) are emphasized because of a chlorine-soda industry that dumps its effluents about 15 km upstream of the estuary and extensive cultivation of sugarcane existent in this watershed. Hg background in pelitic total sediments (PTS) was certain established considering the Hg content (126 ppb) in sedimentary intervals previous to 1910. The production of chlorine-soda (since 1963) coincides with a drastic increase of the Hg concentrations and contemporary values around 6.000 ppb, without interruption in the pollutant process. The conclusions found that the Hg was the main indicator of anthropogenic contribution in the sediments of the Botafogo river. On the other hand, an increase in the Hg-As concentrations has been observed at the last decades due to an increase of the clay mineral fraction in TS of the Manguaba river. This scenario indicates that the accumulation of HM has been constant since the last decades, under a background, around 80 ppm available for pelitic sediments. This result is influenced by small geogenic factors (rock weathering and natural atmospheric contributions) and moderate antropoc factors (urban sewage, agricultural fertilizers, before the 1930'), but is representative of relatively well preserved hydrographic basins under tropical climate. Effectively, the Manguaba's Basin is characterized by little urban and industrial occupations although it includes extensive sugar-cane plantations with great devastation of the native forests.