

## Mercury Status of the Amazon Continental Shelf: Guiana Dolphins (*Sotalia guianensis*, Van Benédén 1864) as a Bioindicator

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**Abstract** Total mercury (Hg) was analyzed in muscle tissue of 27 accidentally captured Guiana dolphins (*Sotalia guianensis*) in order to evaluate Hg contamination levels present in the Amazon Continental Shelf, in Amapá state, North Brazil. The samples showed a mean concentration of  $0.4 \pm 0.16$  µg/g wet weight (ww), ranging from 0.07 to 0.79 µg/g ww. As observed in several other cetacean species, Hg concentrations presented positive correlations to body length, related to the capacity to bioaccumulate this element throughout life. Hg concentrations were not significantly different between males (mean = 0.38 µg/g ww; n = 15) and females (mean = 0.42 µg/g ww; n = 12). Concentrations were low when compared to results of studies carried out with small cetaceans in the Northern

Hemisphere, and with some previous studies in the southeastern region of Brazil. In contrast with high Hg concentrations normally detected in river dolphin samples from Amazon River tributaries, our results suggest that the Amazon coast contains low levels of Hg in bioavailable form.

**Keywords** Guiana dolphins · *Sotalia guianensis* · Amazon shelf · Mercury · Brazil

Studies carried out with small cetaceans in the Northern

In the last several decades, a considerable increase in the number of chemical industries has been observed. This has resulted in the presence of increased amounts of many chemical pollutants, including mercury (Hg), in the marine environment, mainly in coastal regions. This trend has impacted environmental integrity, biodiversity and human health (Fleming et al. 2006; Moura et al. 2011a). There is considerable evidence that background levels of mercury in the environment have increased in recent time. This evidence comes from studies of lakes and ocean sediment profiles and ice cores, and from various types of samples collected in remote areas, as well as the industrialized regions of the planet (Outridge et al. 2007). Most wildlife are exposed to Hg primarily as MeHg through the diet, rather than to other chemical forms of Hg. Due to its lengthy persistence and high mobility in the ocean, MeHg shows a high level of biomagnification in the upper levels of the food web (O'Shea 1999).

Mercury may cause multiple symptomatic effects, such as neurochemical, reproductive, behavioral, physiological, immunological and histological changes, affecting the health and survival of the mammals that are exposed, including coastal dolphins that are chronically exposed (Scheuhammer et al. 2007). High concentrations of Hg

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