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Accumulation of polycyclic aromatic hydrocarbons (PHA) in plants exposed at the industrial city of Cubatão, São Paulo State, Southeastern, Brazil

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Vegetation plays a key role in cycling of many organic chemicals, such as PAHs. After deposition on vegetation, PAHs may alter antioxidants and induce oxidative stress. Biomonitor plants are suitable alternatives for assessing risks imposed by these pollutants to vegetation around industries, such as those found in Cubatão, which are surrounded by the Atlantic Rain Forest. Thus, this study evaluated the PAH accumulation on leaves of *Lolium multiflorum* 'Lema' (a standardized accumulator grass) and *Tibouchina pulchra* (a native tree species) growing in three sites at the Cubatão region (Site 1: away from the industrial emissions and next to a highway; Site 2: near an oil refinery and adjacent to a highway; Site 3: located in the city center and exposed to refinery emissions). Sites 1 and 2 are surrounded by the Atlantic Forest. *T. pulchra* plants were exposed during two 12 week periods (April to July and July to October 2009), and *L. multiflorum* cultures were exposed during six 4 week periods, coinciding with both of *T. pulchra* exposure. Twelve PAHs were analyzed. At the end of the first period, the Σ PAH concentration on *L. multiflorum* leaves ranged from 4472 (Site 1) to 7454 ng.g⁻¹ (Site 2) and on *T. pulchra* leaves from 1083 (Site 1) to 1284 ng.g⁻¹ (Site 2). After the second period, *L. multiflorum* growing in sites 1 to 3 accumulated more Σ PAH (2710, 9141 and 5981 ng.g⁻¹ respectively) than during the first period. Similar increasing Σ PAH was also observed in *T. pulchra* (5657, 9669 and 4398 ng.g⁻¹, respectively), which can be associated with the more intense vehicular traffic on the highways. Both biomonitor species indicated that the Atlantic forest next Site 2 is under higher risk associated with PAHs. The native tree species seems to be an appropriate risk indicator of these pollutants in the region.

Key words: HPAs, *L. multiflorum*, *P. guajava*, Cubatão.

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