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Determination of polycyclic aromatic hydrocarbons in sediments of rain drainage channels in urban zone (Pelotas - RS, Brazil)

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The presence of polycyclic aromatic hydrocarbons (PAHs) and mixture composition in sediments can also be as an indication of sources of pollution. The objective of this study is to evaluate the contamination sources by hydrocarbons derived from urban areas capitated by storm water drainage systems, and determine the levels of PAHs in the studies channels. The extraction of analytes from sample was made in Soxhlet/ultrasonic bath, and with solvents mixture of hexane and acetone. The fractionation of extracts was performed using a column of Na_2SO_4 , silica and alumina. For the chromatographic analysis, the fractions were injected in the GG-MS in split less mode. The hydrocarbons were quantified using a GC-MS (Shimadzu QP 2010 ultra), with a RTX 5MS column. Injector and interface were maintained at 280°C and ions source at 200°C, respectively. The electron-impact (EI) ionization energy was 70 eV, and the carrier gas was Helium (99.999%) at a constant flow rate of 1.0 mL min⁻¹ in SIM mode (m/z were, 128, 142, 152, 154, 166, 178, 202, 228, 252, 276, 278). The detection in SIM mode led to a reduction in detection limits and permitted electronic cleanup of the extracts analyzed. We observed that most PAHs detected and quantified showed 4 to 6 rings. The sum of HPAS indicates a moderately impacted environment, with a predominance of pyrolytic sources. This calls attention to the impact of runoff from urban areas under storm drainage channels, leading to these pollutants area of great environmental importance.

Biography

Pedro J Sanches Filho graduated in degree in Chemistry and graduated in Pharmacy (1988), Master's degree in Chemistry (1997). He obtained the PhD in Analytical chemistry from the Federal University of Rio Grande do Sul (2002) and Post doctoral fellowship by Universidade Nova de Lisboa (2007). He is currently Professor and Researcher at the Instituto Federal de Educação Ciência e Tecnologia Sul-rio-grandense Campus Pelotas -Brazil, leader of the research group on environmental contaminants. He has experience in Analytical Chemistry, with emphasis on Trace Analysis and Environmental Chemistry.

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