

PT, PD AND RH LEVELS IN SOILS OF SÃO PAULO CITY, BRAZIL: ASSESSMENT OF AUTOMOBILE CATALYTIC CONVERTER POLLUTION

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Cars fitted with exhaust catalysts containing Pt, Pd and Rh significantly minimize the emissions of toxic gases produced during gas combustion. On the other hand, surface abrasion of the catalytic converters release these elements into the environment adsorbed on small particles. In Brazil, automobile catalytic converters have been used in the last 15 years. São Paulo is the biggest city in South America with a population of around 19 million inhabitants in an 8,000 km² area with intense industrial activity. According to the air quality control government agency, emissions from 8.4 million motor vehicles daily are the main source of air pollution. In the present study, the results of the concentration of Pt, Pd and Rh in soils collected along the main streets and avenues with high traffic density in the metropolitan region of São Paulo, Brazil, are presented. Soil samples were collected along transects perpendicular to the traffic-lane, in a depth range of 0-5 cm. To obtain representative soil samples, an area of 1m² was sampled for each sampling point (10-15 cm parallel and 1 m perpendicular to the motorway). Inductively Coupled Plasma Mass Spectrometry (ICP-MS) after ultrasound-assisted *acqua regia* leaching was employed as analytical technique. The methodology was validated by the analysis of the reference materials UMT-1 (ultramafic ore tailings, CANMET) and SARM-7 (platinum ore, SACCRM). The levels obtained ranged from 3 to 190 ng g⁻¹ for Pd; 1 to 108 ng g⁻¹ for Pt and 0.1 to 14 ng g⁻¹ for Rh. These values are much higher than those considered as the geochemical background for soils, indicating their catalytic converter origin. The obtained results are the first data for monitoring Pt, Pd and Rh pollution in São Paulo city.