

DETERMINATION OF PLATINUM GROUP METALS IN GREAT URBAN AGGLOMERATIONS

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During the past 60 years the number of cars in the world has increased from 40 million to present 1120 million cars. The vast majority of car catalytic converters contain platinum and palladium. Due to amortization of catalytic converters, concentration of platinum gradually increases near roads. It is lead to increase bioavailability and in the biosphere elements reception arises. For humans and animals, the major concern is airborne dust containing platinum and palladium, because it can settle in their respiratory tracts. In addition, due to climatic influence it can be transported over greater distances, which can cause problems also in large distances from the exposition site. Nevertheless, the highest concentrations of platinum metals are near to the roads, where they accumulate and potentially contaminate the urban sewage network or surface waters. Subsequently, compounds of these metals accumulate in the sediments, where can be transformed to more toxic forms.

In this work we present a monitoring study including two different cities. First Brno (Czech Republic), where live around 380 000 inhabitants and Moscow (Russian Federation) with more than 12 millions inhabitants. Locations for monitoring has been chosen to characterize the places with the highest density of traffic jam. Essentially, these are busy junctions, busy road sections, road bypasses and highways. The results imply that in Brno, the concentration of platinum metals is generally lower than in Moscow. The highest concentration in Brno was found approximately 80ng/g_{soil} for platinum and less 25ng/g_{soil} for palladium.

In Moscow, the concentration of metals is 10 times more than in Brno, which can be attributed statistically higher number of diesel cars, higher density of traffic jam and smaller influence of wind transporting the particles from the exposition sites.

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