CHARACTERIZATION OF ROAD TRAFFIC POLLUTION IN AN URBAN STREET CANYON

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Abstract

Investigation of traffic-related air pollution is of great importance, due its impact of human health and the environment [1,2]. Traffic pollution in all larger cities is additionally burdened by tall buildings along a frequency roads, also known as "street canyon" [3]. Air dispersion and intensity of horizontal and vertical turbulence in a street canyon are very different from the ones that appear in a flat open region, with longer particle retention [4]. In this paper we investigated concentration of volatile organic compounds and road dust particles along the most frequent road in the second largest city in Serbia. The measurements were performed with personal sampler that was attached on operator, who was walking along the road. Absorber with collected volatile organic compounds that was examined with gas chromatography system, showed the highest concentration of benzene. The composition of dust particles, collected on the filter, was examined with scanning electron microscopy - energy dispersive spectrometry analysis. The results shown high levels of carbon, silicon, iron and aluminum, and presence of heavy metals. Size and shape of road dust particles was determined by the image analysis method, with ImageJ software. Based on the composition, size and morphological characteristics of the particles, we have identified the origin of the particles. The most particles originated from soil, motor vehicles (tire/brake abrasions) and particles generated during the road reconstruction/construction.
This research enabled the assessment of the impacts on human health, and on the environment as well.

References

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