

Interactive comment on “Benzo(a)pyrene in Urban Environment of Eastern Moscow: Pollution Levels and Critical Loads” by Nikolay S. Kasimov et al.

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The theme of the paper is within the scope of ACP Journal; it is devoted to the scientific questions, extremely actual but not enough studied in Russia and in other countries. The authors examine the fate and behavior of benzo(a)pyrene (BaP) in urban environment which belongs to very dangerous organic pollutants. The main part of BaP research in urban landscapes is devoted to determining its possible sources and its content in the soils of various land-use areas. Much less publications concern the rate and duration of BaP decomposition in different soil-geochemical conditions that depend on the alkaline-acid and redox conditions, humus content.

In this paper, the first attempt was made to examine all characteristics of BaP balance in urban soils of the Eastern District of Moscow and to calculate the possible

C1

self-purification of urban soils from BaP. The first estimation of BaP critical loads on urban soils was done by authors what emphasize importance and novelty of this article. Previously, this approach was used to calculate the permissible loads of acidity on forest ecosystems in Europe (ICP-Forests) and the critical loads of heavy metals and metalloids (de Vries et al., 1997).

The study area is characterized by various anthropogenic impacts on different land-use zones: industrial areas, highways, residential blocks of different height and density, recreational and post-agrogenic zones. For this area the BaP input with atmospheric deposition and content in the soils were defined, their spatial heterogeneity is shown on maps of atmospheric deposition intensity and technogenic anomalies in the topsoils in the Moscow's Eastern District. Because of poor knowledge of BaP degradation processes multiple calculations are carried out covering the various range of degradation intensity and exposure time data, as well as the initial BaP content in the soils. This paper presents the results of high practical significance: calculations of the dynamics of soils self-purification from polycyclic organic compounds, specifically BaP. They are based on the own large-scale approach of authors applied in Eastern part of Moscow and meet the modern level of studies in the environmental geochemistry. The first application experience of the critical loads approach for BaP showed the significance of investigations of BaP losses through the decomposition including biodegradation.

Touching author's response to the comments of Anonymous Referee #2 to the manuscript, all used methods are valid and clearly outlined. The description of experiments and presented algorithm of calculations is sufficiently complete and precise; in case of interest the experimental part can be reproduced by fellow scientists. The abstract provides a concise and complete summary; it reflects the ground, main algorithms and conclusions of the research. The paper is well structured; the logic of the material is clear. The authors analyzed the vast amount of literature devoted to BaP concentrations in urban environment (e.g. in soils and atmospheric precipitation) including articles in Russian what allow researchers from different countries to get ac-

C2

quainted with this data. The conclusions of the article are of high practical significance. They can be used for planning remediation measures or choosing possible directions in territory use. The results are presented clear enough and allow to give an interpretation and to formulate a conclusion. The original contribution is presented

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