

# Petroleum pollution of alluvial sediments near Sava river, Serbia



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## Introduction

Heating plant "New Belgrade" is located on the left coast of the Sava River, about 1km from its estuary in the Danube, and represents a potential source of petroleum pollutants for the alluvial area of the river, ground water as well as Sava river (Fig.1.).



Fig.1. Location of Heating plant "New Belgrade".

Presence of different oil pollutants in the soils and sediments in this area has already been confirmed (Miletić et al, 2015). The aim of our research was to determine the presence of petroleum pollutants and their vertical migration in the alluvial area of Sava river.

The investigation was started in the summer of 2015. The soil was sampled in three different microlocations (Z1, Z3 and Z7) up to depth of 15m. The sampled material was organized in the layers, and for all microlocations was made a lithological profile. The samples have had a clayey-sand structure with low content of organic matter.

## Materials & methods

Extraction of petroleum pollutants from soil samples were done using the Soxhlet apparatus with dichloromethane. After extraction, the dichloromethane extracts were then fractionated by column chromatography into fractions of: saturated hydrocarbons (Fraction I), aromatic hydrocarbons (Fraction II), and polar compounds (alcohols and keto compounds (Fraction III) [1].

For monitoring changes in the vertical migration of petroleum pollutants, and the relationship of this migration with the soil characteristics, the group composition was determined for each borehole of all microlocations, taking into account their lithological profiles (Jovančićević et al, 2005).

## Results & discussions

Results of our research showed that in all samples the most represented were polar compounds (Fraction III), while the saturated hydrocarbon were least represented (Fraction I). This trend is almost unchanged in samples from different microlocation at different depths. (Fig.2.).

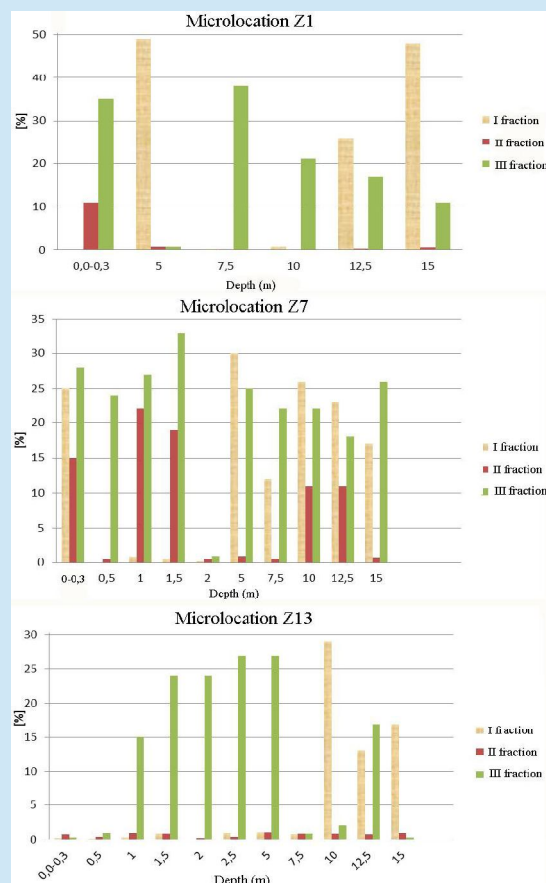


Fig.2. Profiles of different fractions from samples Z1, Z7 and Z13.

## Conclusions

It can be concluded that composition of petroleum pollutants can be unchanged through the alluvial sediments up to 15m depth and they can reach the underground waters, Sava river and consequently disturb the quality of the environment.

## References

- Miletić S., Ilić M., Avdalović J., Šolević Knudsen T., Beškoski V.P., Branimir Jovančićević B., Vrvic M.M. (2015) Oil pollution in the vicinity of a heating plant in New Belgrade (Serbia) – influence on the quality of the surrounding soil and sediments. 16th European Meeting on Environmental Chemistry, EMEC16, Book of Abstracts. November 30 – December 03. 2015, Torino, Italy.
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