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**ENGINEERING, ENVIRONMENT AND MATERIALS  
IN PROCESS INDUSTRY  
EEM2023**

**BOOK OF ABSTRACTS**



**JAHORINA  
MARCH 20-23, 2023**

**REPUBLIC OF SRPSKA  
BOSNIA AND HERZEGOVINA**

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**BOOK OF ABSTRACTS**

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PROCESS INDUSTRY***

***EEM2023***

**UNDER THE AUSPICES OF  
MINISTRY OF ECONOMY AND ENTREPRENEURSHIP OF THE REPUBLIC OF  
SRPSKA**

**AND**

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Phone: +387 56 260 190

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## CORRELATION BETWEEN ABUNDANCE OF MICROPLASTICS AND CONCENTRATION OF PHTHALATE ESTERS

Nataša Stojić, Ljiljana Ćurčić, Dunja Prokić, Mira Pucarević

Faculty of Environmental Protection, Educons University, Sremska Kamenica, Serbia,  
[natasa.stojic@educons.edu.rs](mailto:natasa.stojic@educons.edu.rs)

### **Abstract**

*In the period from 2017 to 2022, 4,500 soil samples from the territory of Vojvodina were analyzed as part of the program for monitoring non-agricultural land. The results showed that the biggest problem was the presence of phthalate esters, which in certain locations were higher than the maximum allowed concentrations. Phthalate esters are plasticizers that are added to plastic products to improve their characteristics. A big problem appears in countries that do not have or do not implement waste management regulations and a large number of plastic products end up in landfills. Phthalates can be washed out from everyday plastic products as well as from plastic films, sewage irrigation, sludge, composting and mulching films used in agriculture and thus end up in soil and water bodies. The next risk is the possibility of the decomposition of plastic products under the influence of environmental conditions (photodegradation, thermooxidative degradation, hydrolytic degradation, and biodegradation by microorganisms). They can be broken down into smaller particles with dimensions smaller than 5 mm, which is by definition microplastics. Given that both polluting substances generally have the same origin it is necessary to quantify the correlation between the amount of microplastics and the concentration of phthalates. This results helped us in the exposure assessment process and in prediction the environmental concentrations of phthalates associated with microplastics in soil which was the goal of this research.*

**Keywords:** Microplastics, phthalate esters, soil, environment.



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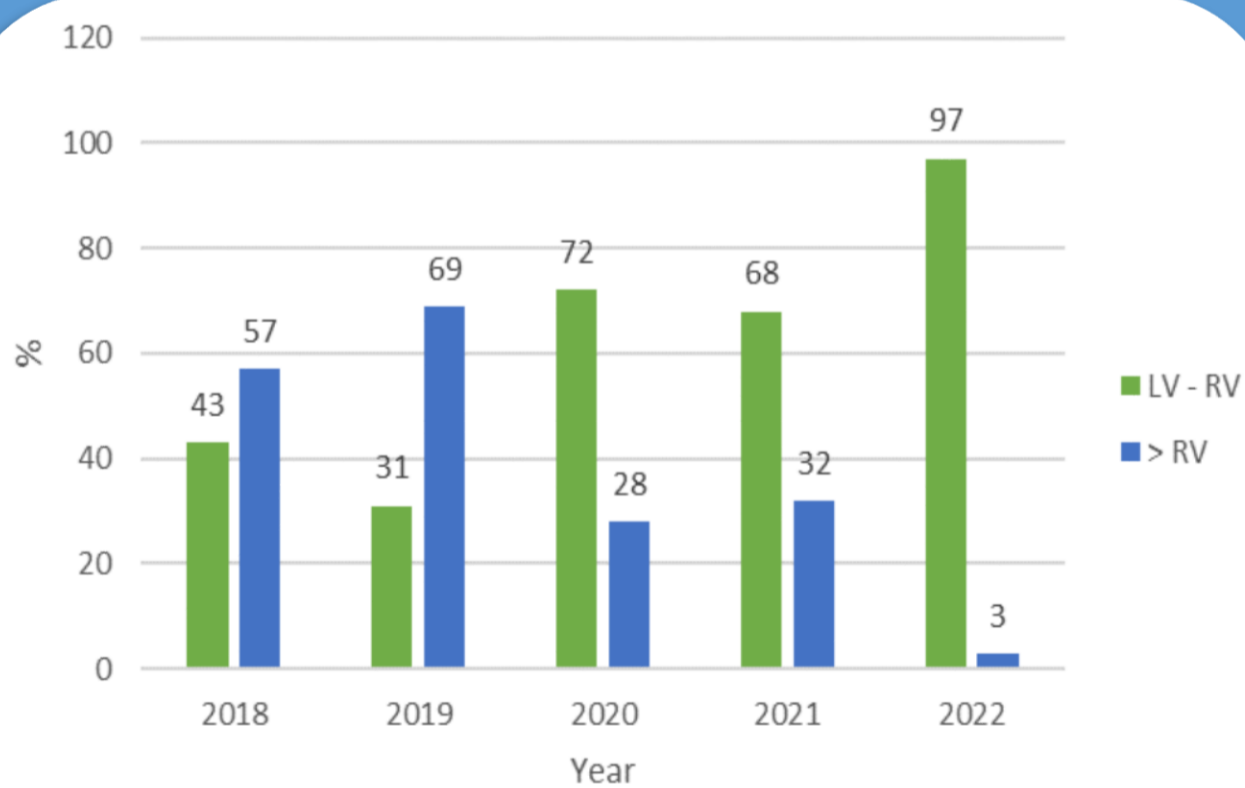
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# MICROPLASTICS

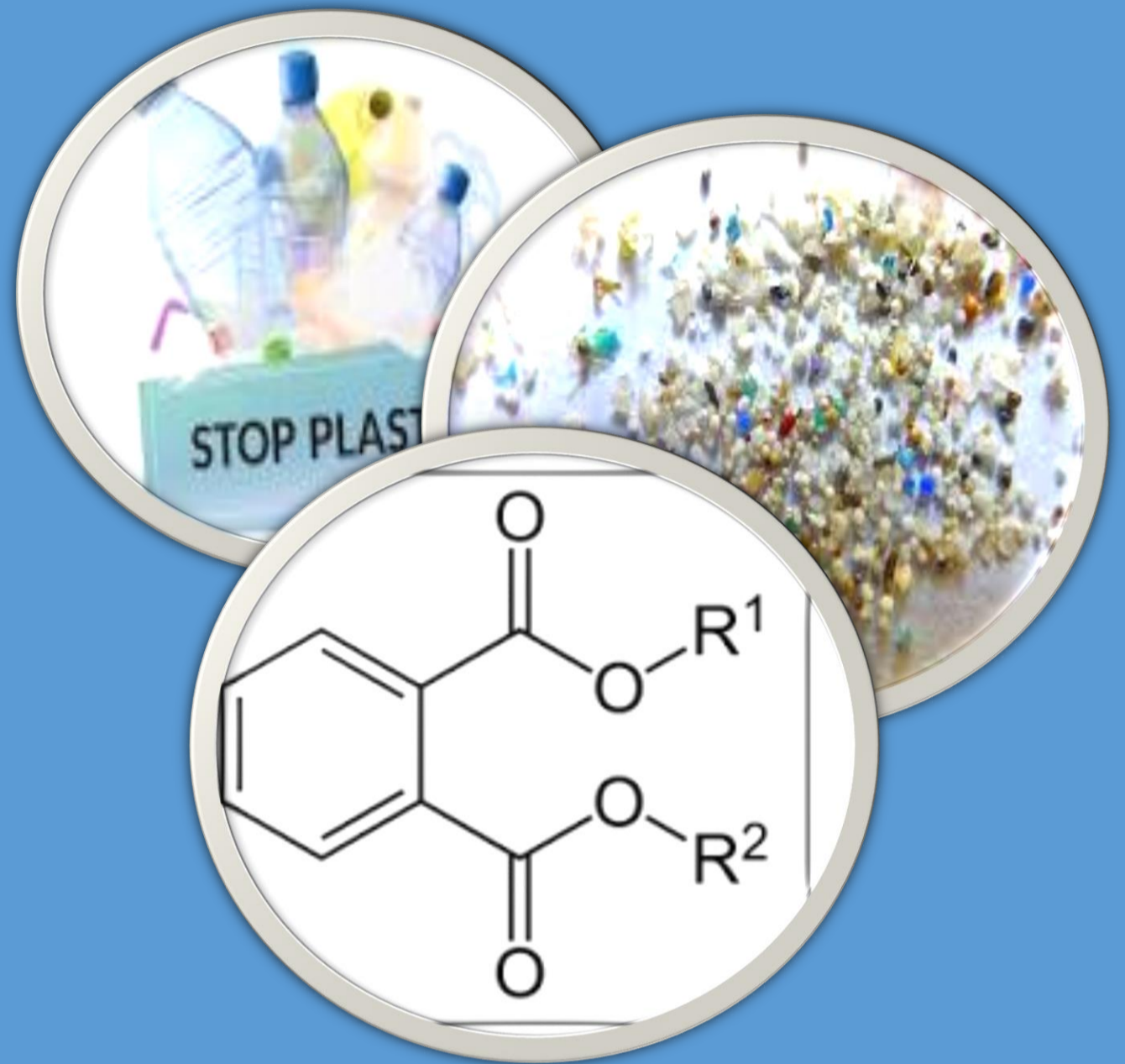
Authors: Nataša Stojić, Ljiljana Ćurčić, Dunja Prokić, Mira Pucarević  
Faculty of environmental protection, Educons University, Serbia

## Correlation between abundance of microplastics and concentration of phthalate esters

*Phthalates can be washed out from everyday plastic products as well as from plastic films, sewage irrigation, sludge, composting and mulching films used in agriculture and thus end up in soil and water bodies. The next risk is the possibility of the decomposition of plastic products under the influence of environmental conditions (photodegradation, thermooxidative degradation, hydrolytic degradation, and biodegradation by microorganisms). They can be broken down into smaller particles with dimensions smaller than 5 mm, which is by definition microplastics.*



## Concentration of phthalates throughout the years in AP Vojvodina



## The main sources of microplastics

Synthetic textile	35%
Car tyres	28%
City dust	24%
Personal hygiene products	2%

## Keywords

Microplastics  
Phthalate esters  
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Environment

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