

Research on microplastic pollution: progress and challenges

Sonata Pleskytė

Department of Environmental Research, Center for Physical Sciences and Technology,
Saulėtekio al. 3, Vilnius, 10257 Lithuania
e-mail: sonata.pleskyte@ftmc.lt

Nowadays, microplastic pollution is one of the biggest environmental threats. Microplastic particles can sorb, accumulate and transfer different chemical contaminants, and serve as vectors for harmful pathogens and invasive species. The newest research even presented fundamental links between microplastic pollution and climate change. Moreover, these particles might enter the human body through the food chain or simply by breathing.

This presentation aims to introduce recent research on microplastic pollution performed in the Department of Environmental Research, Center for Physical Sciences and Technology (FTMC).

Microplastic pollution was evaluated in different environmental systems including Lithuanian rivers, lakes, Baltic sea-Curonian spit. Microplastic particles have been detected in the following water bodies and analyzed according to their chemical and

physical properties. For the first time, microplastic pollution and removal efficiency was also evaluated in a wastewater treatment plant located in Lithuania. On average, 57% of microplastics have been removed during primary and secondary treatment stages. Microplastic particles were also found in human lungs. All of the samples that were analyzed contained microplastic particles. The most potential methods for microplastic removal were presented and discussed. The evaluation of microplastic removal efficiency by applying photocatalytic degradation accounted for 50%. Further research on microplastic removal technologies is necessary for removal efficiency improvement.

The new insights into MPs pollution levels and our suggested microplastic degradation mechanisms play a key role in the fight against the global plastic pollution challenge.