
Microplastic pollution in rainfall and air samples, case study of Slovenia

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Abstract

Study of microplastic (MP) pollution in rainfall and air samples was done on four different sites in Slovenia: mountain Komna (next to the mountain hut), Lesce (on a lawn of a private home), Malni spring (only rainfall samples) and Rižana spring. Mountain Komna was chosen as the most remote location (1520 m above sea level), without any big sources of pollution nearby, while Lesce site was chosen due to closeness to the main motorway and railway, therefore it was expected to be the most polluted site. Both springs are regionally the most important sources of drinking water – Malni supplies water to more than 22,000 inhabitants, while Rižana supplies potable water to the entire coastline in Slovenia. In all samples we found mainly fibres with a very small proportion of other irregularly shaped particles. Of all rainfall samples, the highest concentration of MP /m³ was found in the samples from Komna, even though the sampling site is located in the Triglav National Park and has no major pollution sources. The air samples contained much lower amounts of MP /m³ compared to rainfall samples - we found only one particle per sample and only a few times at all sampling locations. Regarding the results of the polymer analyses, the highest percentage in the precipitation samples was the polymer PA. We also found other plastic polymers, such as PE, copolymers, resins, PET, PP, and rubber, but the percentages varied greatly from site to site.

Keywords: microplastic, Triglav National Park, mountains, Alps, water springs, karst

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