



## Microbiological indicators of the biofilms microparticles of quartz sand and polypropylene after short-term exposure in soil

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### ABSTRACT

The purpose of this study was to investigate dynamics of biofilm biomass on microparticles of natural material quartz sand and the artificial material polypropylene (plastisphere) as well as change in biofilm-forming microorganisms' number under a short-term *in situ* field study. In this study microparticles of polypropylene and quartz sand ranging in size from 3 to 5 mm were used. The total microbial count and the number of sulfate-reducing bacteria in the biofilm (by traditional culture-based microbiological methods) and the biofilm biomass (by the method with the crystal violet) were investigated. According to the determined microbiological indicators, over time (90 days) on the polypropylene it was observed decreasing of both the number of studied groups of microorganisms and the formation of a microbial biofilm, compared to the quartz sand. Determination of microbiological indicators of the materials surface allows understanding the aspects of their preservation/removal from the environment and requires additional research.

### ARTICLE HISTORY

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### KEYWORDS

biofilm; polypropylene; quartz sand; soil; sulfate-reducing bacteria; the total microbial count