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CONTAMINATION OF GROUNDWATER WITH PHENOL DERIVATIVES AROUND A DECOMMISSIONED CHEMICAL FACTORY

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Abstract

In this study, the concentrations of 15 phenol derivatives were analyzed from the phreatic and groundwater wells surrounding a decommissioned chemical factory in a village from the western part of Romania. An UPLC-MS method was used to assess the concentrations of the chemical target compounds in the water samples. The most frequent compounds were 4-chlorophenol, 4-tert-octylphenol and 4-nonylphenol, being detected in 17 of the 19 sampling sites, while the least frequent compound was 2,4,6-trichlorophenol, that was found in only 7 samples. The highest mean concentration was obtained for bisphenol A (47.54 $ng \cdot mL^{-1}$), while 2,4-dinitrophenol was found with the lowest mean concentration (9.38 $ng \cdot mL^{-1}$). The most contaminated water samples were found in the monitoring wells placed downstream of the factory. With the exception of the samples taken from the municipal drinking water system, the samples from phreatic water wells contained the target phenol derivatives, at various concentrations. Although the platform has ceased completely, the hazard caused by decades of continuous phenolic pollutant leakage is still significant to the present day.

Key words: monitoring wells, phenol derivatives, water contamination

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