

Spatial and seasonal variability of BTEX and microbial quality in seawater

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Abstract

Seawater quality in urban centers is quite important in summer for attracting tourists and for sustaining marine life. In summer, seacoast cities present a quite more intensive social-economic activity.

The aim of this study was to determine the levels of Benzene, Toluene, o-, m-, p-Xylenes and Ethylbenzene (BTEX) in water samples from Mediterranean Sea, in Limassol, Cyprus. The samples were taken in various time intervals from the same sampling points. The sampling stations were selected because of higher shipping and human activities in the coastal line. The determination of BTEX was performed by headspace solid phase micro-extraction gas chromatography mass spectrometry (HS-SPME-GC-MS) analysis. Once released in the environment, BTEX compounds usually evaporate quickly into the air, dissolve in water, and may be found in surface and groundwater; they are considered markers of anthropogenic activities. In parallel, for testing the seawater quality, additional water samples were analyzed for microbial analysis (*E. coli*, *Enterococcus spp.*, *Coliforms*).

The presence of BTEX and microbes showed spatial and seasonal variability. BTEX are industrial products that can easily enter the environment. Their origin can be attributed to ship-sourced oil, other than direct discharge of shipping industry, naval and urban activities. This study highlighted the importance of a continuous monitoring of chemical and biological pollution connected to human activities in the Mediterranean Sea, in order to assess potential risks to the health or survival of humans and wildlife species.