Theme 02: Agriculture, Environment and Water

Impacts of COVID-19 Pandemic on Water Quality of Meriç–Ergene River Basin, Türkiye

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Freshwater resource plays pivotal role in the economic development of a region. The objective of present research was to investigate the impact of the COVID-19 lockdown on surface water quality of the Meriç–Ergene River Basin. This was achieved by examining the levels of physicochemical parameters in water collected from 25 designated sampling site of the studied basin. Significant ecotoxicological indicators, including the Heavy Metal Pollution Index (HPI), Heavy Metal Evaluation Index (HEI), Total Hazard Index (THI), and Total Carcinogenic Risk (TCR), were evaluated for the examined data. The findings revealed that organic pollution and salinity variables did not exhibit significant variation of pre-lockdown and lockdown periods. These were attributed to the regular discharge of domestic and agricultural wastewater. However, the levels of inorganic pollutants such as heavy metalloids showed a considerable decrease during the lockdown. Correspondingly, the HPI and HEI revealed that water quality was significant improved for the investigated locations. Additionally, THI values for children and adults decreased by 67% and 69%, and the TCR values for As and Cr lowered by 60% and 94%, respectively. This decrease was attributed to limited operation of most industrial activities and subsequent effluents within the watershed during lockdown period. The COVID-19 pandemic underscored that the sustainable utilization of water and other natural resources are within human control, and effective management strategies could mitigate ecosystem degradation.

Keywords: COVID-19; Heavy metalloids; Total Hazard Index; Total Carcinogenic Risk