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ASSESSMENT OF THE PROBABILITY OF THE SARS-COV-2 VIRUS PRESENCE IN SANITARY WASTEWATER

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Abstract

Portable toilets provide essential sanitation for events and sites, benefiting people and the environment by conserving vital natural resources. The study aimed to assess the feasibility and accuracy of a wastewater-based epidemiological (WBE) monitoring tool derived from portable toilets. This study addresses a critical challenge for public health and the environment, the potential presence of SARS-CoV-2 in sanitary wastewater, and evaluates the biological load in sewage from portable toilets, addressing overlooked challenges in sanitation, sustainability, and waste management. Specifically, it investigates the rapid detection of SARS-CoV-2 antigens in wastewater samples collected from the tanks of portable toilets placed in three towns in western Romania.

The results provide valuable insights into the potential role of wastewater surveillance in monitoring SARS-CoV-2 at the community level, especially in areas with limited access to traditional testing facilities. These findings emphasize the importance of integrating wastewater analysis into public health monitoring frameworks. However, the study also highlights the need for further research to confirm the presence and viability of SARS-CoV-2 in wastewater from portable toilets, including a detailed analysis of the viral load, its persistence, and the potential risk of fecal-oral transmission.

The study also emphasizes the limitations of rapid antigen tests, especially in wastewater applications. It emphasizes validating these methods and developing robust protocols to ensure accurate and reliable detection, which are crucial for both immediate public health interventions and long-term strategies to prevent the spread of infectious diseases.

Key words: fecal-oral transmission, mobile toilets, sanitary wastewater, SARS-CoV-2

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