



Application of UV disinfection in municipal wastewater treatment plants for agricultural use of reclaimed wastewater in Turkey

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ABSTRACT

In this study, the UV disinfection efficiency based on wastewater quality parameters such as suspended solids, UV transmittance, and initial coliform concentrations (total and fecal coliform) was examined and the appropriate UV-C doses for providing the fecal and total coliform values declared at different regulations and standards for agricultural reuse were investigated. The study was carried out in a UV pilot plant installed at Pasakoy advanced biological wastewater treatment plant, located in Istanbul. The pilot plant was an open-channel system with a capacity of 100 m³/h. The pilot plant also contained a pressurized sand filter. The effluent taken from the outlet of final clarifiers of Pasakoy WWTP was used in the pilot plant trials. Experiments were conducted with filtered and unfiltered wastewater at various UV-C doses between 20 and 150 mWs/cm². The results of the study indicated that the required UV-C dose to achieve a Class 1 water quality according to Turkish Regulations is 140 mWs/cm². UV transmittance (measured at 254 nm) and the suspended solids content were determined as the most important wastewater quality parameters affecting the UV disinfection efficiency.

Keywords: Agricultural reuse; Coliform bacteria; UV disinfection; Wastewater

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