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A tool for a comprehensive assessment of treated wastewater quality



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ABSTRACT

The main goal of a wastewater treatment plant (WWTP) is to comply with the treated wastewater (TWW) quality requirements. However, the assessment of this compliance is a rather complex process for WWTPs in the EU Member States, since it requires the integration of a large volume of data and several criteria according to EU Directives 91/271/EEC and 2000/60/EC. A tool for a comprehensive assessment of TWW quality in this context is herein presented. The tool's novelty relies on an integrated analysis of performance indicators (PIs) and new performance indices (PXs). PIs integrate the several compliance criteria into a single framework, supported by flowcharts for a straightforward assessment of TWW compliance by practitioners. PXs are obtained by applying a performance function to the concentration values analysed in the TWW for discharge or reuse. PXs are dimensionless and the scale adopted (0–300) defines three performance levels: unsatisfactory, acceptable and good performance. The reference values proposed for these levels and for the PIs were based on the EU legislation. The PXs complement the information provided by the PIs. While the latter assess the plant effectiveness in a given year (i.e. the TWW compliance with the requirements), PXs tackle the plant reliability, i.e. they allow to easily compare the performance of different parameters over the time and to identify when the performance did satisfy or fail the pre-established objectives and the distance that remains to achieve these targets. The tool was tested in 17 WWTPs and the most representative results are herein illustrated.

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