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Effect of environmental and operating conditions on a full-scale trickling filter for well water treatment

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ABSTRACT

The effect of temperature, hydraulics and pollutant loading on a full-scale trickling filter performance for simultaneous ammonium, iron, and manganese removal was studied. Pollutant concentrations fluctuate sharply in raw well water, exceeding many times the maximum permitted limits. Measurements taken during the one-year continuous operation of the filter, as well as the 24 h experiments performed in various seasons, have shown a dependence of the pollutant removal efficiencies on temperature (8–28°C) and hydraulic loading (5–12 m^3/h) shocks. However, in all environmental and operating conditions, high removal efficiencies were achieved for ammonium, iron and manganese maintaining final concentrations at the filter outlet to below EC parametric values.

Keywords: Biological filter; Water treatment; Ammonium; Iron; Manganese; Hydrogen sulphide; Environmental and operating conditions

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