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MODELING THE CHLORINE-CONVEYING PROCESS WITHIN A DRINKING WATER DISTRIBUTION NETWORK

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Abstract

The distribution network is the last component of a water supply system in which potable water must be provided to the consumer. The presence of chlorine in drinking water is a necessity and a guarantee that water is microbiologically compliant. The study was carried out by means of the Epanet 2.0 program on a future distribution network in the hilly area, in which a simulation period of 4 days was considered. The water quality analysis was performed using the flow rates resulting from the hydraulic simulation. To track the propagation of the contaminant through network pipelines, a maximum permissible value of 0.5 mg/L, entered during the entire simulation period, was considered. The reactions that occur in the bulk flow, were modeled by means of a 1st and 2nd order a decomposition law. The obtained values of the free residual chlorine concentration showed that during the 96 h of simulation, there were certain pipelines in which the chlorine concentration did not meet the minimum allowable limit of 0.1 mg/L. Modeling water quality offers the opportunity to view the decreasing of chlorine concentration, so that the free residual chlorine dosage can be optimized.

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