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DRINKING WATER QUALITY IN WATER-SUPPLY NETWORKS

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Abstract

The paper describes some studies on the influence of water flow rates through water-supply networks on drinking water quality. Water residence time in pipelines for more than seven days in buried pipes and two days in above-ground pipes promotes the development of biochemical systems when the flow rates are low and very low having detrimental consequences on drinking water quality. These shortcomings are due to the residual chlorine decrease below the allowed technical limits (0.5 m/s) as a consequence of the fact that in distribution pipes, fittings and drain junctions the water flows at low rates reaching far to stagnate over the admitted residences. The case study was conducted on the water-supply network in the city of Timișoara using the EPANET program. The hydraulic parameters (flow, diameter, flow rate, loss of head) of EPANET are correlated with the water stagnation periods (residents) on pipe sections with residual chlorine allowed at every point of consumption. After analyzing the distribution of water flow rates in the network, it was concluded that in almost all situations these were between 0.3-0.9 m/s. For a safe disinfection, the residual chlorine in drinking water must be at least 0.3 mg/L.

Key words: biological ecosystem, flow rate, residence time, residual chlorine, water-supply network

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