

عنوان مقاله:

Occurrence and Risk Assessment of Targeted Pharmaceuticals Active Compounds in Drinking Water Treatment Plants at Shanghai, China

محل انتشار:

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خلاصه مقاله:

The Occurrence of nine selected pharmaceutically active compounds (PhACs), namely Paracetamol, Carbamazepine, Sulfamethoxazole, Pentoxifylline, Gemfibrozil, Diclofenac, Ibuprofen, Tetracycline and Naproxen were investigated in influents and effluents of two drinking water treatment plants (DWTPs) across Shanghai, China. In addition, the removal of these compounds in both DWTPs with different existing technologies (DWTP-A: biofiltration process, activated carbon and ozonation; DWTP-B: sand filtration and coagulation, flocculation and sedimentation) was investigated. The concentrations of these compounds in the influents from the two DWTPs showed substantial variations with average concentrations ranging from 3.24 ng L⁻¹ for Tetracycline to 62.3 ng L⁻¹ for Gemfibrozil, while Naproxen and Carbamazepine were found in effluents with average concentration of 0.26 ng L⁻¹ and 1.53 ng L⁻¹, respectively. The risk assessment based on the "worst case scenario" of the monitoring data from the influents of the present study suggested that Diclofenac and Sulfamethoxazole could pose a medium risk to the aquatic organisms while other compounds showed no potential toxic risks to aquatic organisms. A screening level risk assessment implied that the concentrations of the detected PhACs are well below levels that would pose a risk to the health of consumers of drinking water at Shanghai, China. Biodegradation using ozone was found to be the most effective mechanism for removing concentrations of PhACs, while filtration appeared to be a minor process for removing all PhACs.

کلمات کلیدی:

Aquatic organisms, Drinking water, Pharmaceutical active compounds, Risk assessment, Water treatment

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