Effect of biofiltration process on the control of THMs and HAAs in drinking water

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ABSTRACT

Natural organic matter (NOM) is the precursor of disinfection by-product (DBP) formation potential. In this study, the aim was to investigate NOM removal and chlorinated DBP reduction by the biofiltration process. Different materials (zeolite, sand, and granular activated carbon (GAC)) and contact time effects were evaluated by feeding Porsuk water (PW) from Eskisehir, Turkey. The reduction performances of trihalomethane formation potential (THMFP) and haloacetic acid formation potential (HAAFP) were higher in the GAC column than in the sand and zeolite columns. The GAC biofilter column removed 64% of dissolved organic carbon (DOC), and therefore, THMFP and HAAFP were decreased by about 68 and 64% in 30 min. The zeolite and sand biofilter columns only reduced HAAFP by 27 and 21%, respectively.

Keywords: Biodegradable dissolved organic carbon (BDOC); Biofiltration; Biological activated carbon; Disinfection by-products (DBPs); Eskisehir Porsuk water (PW); Haloacetic acids (HAAs); Natural organic matter (NOM); Trihalomethanes (THMs); Water resource

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