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Evaluating of the Disinfection and Water Quality Effects on UV Application in the Primary Stage of Water Treatment

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Abstract:

Background: Irradiation of water by UV has been considered as an attractive alternative for disinfection because its low-impact, pathogen killing capacity shows tremendous promise for meeting today's drinking water regulatory requirements. This study has been performed with the objective of utilizing medium pressure lamp in the preliminary stage of municipal wa-ter treatment, namely prior to water clarification and filtration. Methods: Raw water samples were irradiated for 30 s in a lab-scale closed reactor. Disinfection results showed nearly 2 log reduc-tion in HPC for all the samples without formation of nitrite in excess of its MCL. As in a few previous works the forma-tion of nitrite as an objectionable DBP had been reported, this study was extended by preparing synthetic water sam-ples having different amounts of nitrate and turbidities. Results: As far as the initial nitrate concentration dose not exceed 10 mg/L N-NO₃, there would be no risk of nitrite increas-ing in excess of the MCL. Conclusion: Meeting the goal of at least 90 % disinfection for water samples with turbidity levels of as high as 750 NTU is possi-ble by utilizing medium- pressure UV lamp.

Keywords:

[Drinking](#) , [Pressure](#) , [Nitrites](#)

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