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Overlapping Photodegradable and Biodegradable Organic Nitrogen in Wastewater Effluents

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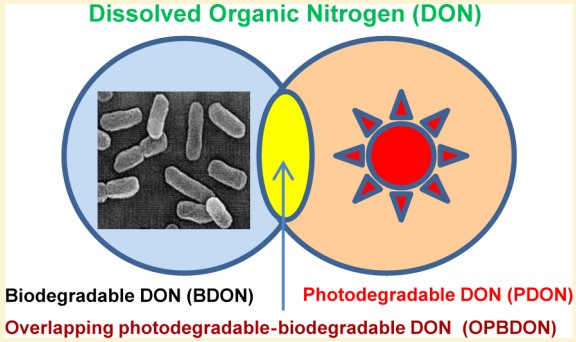
Supporting Information

ABSTRACT: Photochemical degradation of dissolved organic nitrogen (DON) in final effluent of trickling filter and activated sludge wastewater treatment plants (WWTPs) was studied. Inorganic N, mostly nitrite, was produced from the photodegradation of DON for samples from both WWTPs. Photodegradable DON (PDON), biodegradable DON (BDON), and overlapping photodegradable–biodegradable DON (OPBDON) were determined. BDON was associated with PDON as well as non-PDON. BDON and PDON concentrations in the final effluent samples were 4.71 and 4.62 mg N/L for the trickling filter plant and 3.95 and 3.73 mg N/L for the activated sludge plant, indicating that photodegradation is as important as biodegradation in the mineralization of effluent DON in receiving waters. OPBDON, which is more problematic in the water environment because it can be mineralized by light or bacteria or both, was 3.68 and 2.64 mg N/L (57% and 43% of total DON) in the final effluent samples from the trickling filter and activated sludge plants, respectively. The DON fraction that is resistant to biodegradation and photodegradation was 10% to 20% of total DON.



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