

Atmospheric nitrogen deposition and impacts on aquatic ecosystems

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The atmospheric deposition is an important route as a source of the pollutants into water. The biogenic elements as nitrogen are especially delivered to aquatic ecosystem. Miyun reservoir is the only surface water source for drinking in Beijing, China. The water quality still meets the 2nd class of National Standard of Surface water, but with at the degraded trend. The main pollution comes from diffuse pollution including runoff of livestock manure, fertilizer and waste from villages and tourists. This work aimed to understand the Nitrogen contribution from atmospheric deposition to reservoir. Field monitoring for atmospheric deposition was conducted in Miyun watershed from spring to autumn in 2013. The average TN concentration in rain is about 8.64 mg·L⁻¹, in which NH₄⁺-N, NO₃⁻-N and DON contributed 36.5%, 24.1% and 39.4% of TN. DON is the main form of nitrogen in rain. The concentration of TN in rain became lower with the increase of rainfall. The average nitrogen deposition is 593.09 kg·hm⁻², in which wet deposition is about 8.6% and dry deposition 91.4%. NH₄⁺-N, NO₃⁻-N, and DON contributed 24.2%, 28.5% and 47.3% of TN deposition fluxes. The dry deposition in spring season is highest because Beijing is dry climate in spring with frequent heavy dust. The deposition in spring and autumn occupied 50.4% of annual deposition. In summer, wet deposition is highest because at least 75 % rainfall is on the late July to early August. The N contribution of atmospheric deposition to Reservoir is at considerable rate.

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