عنوان مقاله:

Nitrogen removal by floating constructed wetland: Decontamination of the Buriganga River

محل انتشار:

مجله مدیریت ومهندسی بهداشت محیط, دوره 7, شماره 3 (سال: 1399)

تعداد صفحات اصل مقاله: 6

نویسندگان:

Mohammad Tahsin Islam - *Resident Engineer (Civil), Gerico France, Paris, France*

Irin Hossain - *Corresponding author:Department of Occupational and Environmental Health, National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh*

Ashekur Rahman Mullick - *National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh*

Enamul Haque - *amil Iqbal Limited, Dhaka, Bangladesh*

خلاصه مقاله:

Background: Buriganga is considered as one of the most important river in the country. But, its water quality has changed dramatically, which is responsible for creating unfavorable conditions for aquatic life. The main aim of this study was to investigate the removal capacity of pollutants mainly nitrogen present in the Buriganga river as the most polluted rivers in Bangladesh, by floating constructed wetland. Methods: This study was conducted under constant and variable shock loadings in two phases, namely ‘Phase I’ and ‘Phase II’ during 11 and 10 weeks, respectively, in which about 180 L of raw water was dosed into the tank containing a floating mat, and pollutant concentrations in the river water influent from the system were tested over a period of 21 weeks. Results: Floating treatment wetland (FTW) could sustain and remove about 31.25% and 19.23% of ammonia in the 9th and 10th weeks of Phase I, respectively, and 40.63% and 56.12% in the 17th and 18th weeks of Phase II, respectively. At first, ammonia was converted to ammonium, then, to nitrite, and finally, to nitrate. As the rhizosphere was denser and the biofilm was thicker in this study, so nitrogen removal efficiency during the application of shock loading in the 17th and 18th weeks of Phase II was considerable. The removal percentage of nitrite was 76.12 and 80%, respectively. In regular dosing of raw water in the 11th and 19th weeks in Phase I and Phase II, respectively, the total nitrate removal efficiencies from influent were 31.91 and 43.33%, respectively. Conclusion: As water resources are limited, so improvement of water quality of the polluted Buriganga river would act as an important source of reusable water.

کلمات کلیدی:

Nitrogen, Nitrites, Nitrates, Ammonium compounds, Water quality, Wetlands, Bangladesh