POTENTIAL OF NITROGEN CYCLE FOR BIOLOGICAL WASTEWATER TREATMENT: GENERAL OVERVIEW

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Nowadays there is a growing interest to develop technologies for the removal of complex mixtures of organic and inorganic compounds from industrial wastewaters, such as the chemical, petrochemical, paper mill industry, among others. The interest of the scientific community in the biological nitrogen cycle is at present very high, because it can be linked to either sulfur or carbon cycles. The connection of biological cycles is of the utmost technological relevance as it has allowed the simultaneous elimination of reduced sulfur and phenolic compounds under nitrifying or denitrifying conditions. Partial nitrification to nitrite, and nitrite denitrification was reported to be technically and economically feasible, especially when wastewater with low C/N ratios is treated. To date, nitrification-denitrification via nitrite technology has attracted more and more interest after successful application of SHARON (Single reactor system for High Ammonia Removal Over Nitrite process) in practice. Finally, there are nowadays still many discoveries to be made about the metabolism, phylogeny and ecological behavior of bacteria that play an important role in the nitrogen cycle.