

A review on Biological Denitrification of Nitrate Rich Ground Water Using Different Carbon Sources [†]

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Abstract: The excessive use of fertilizers, pesticides, and the disposal of nitrogen component-rich effluents from various manufacturing industries on the land and in the water has led to the nitrification of groundwater. Water with a high concentration of nitrates, nitrites, and other nitrogen compounds is harmful as it results in toxicity, eutrophication, oxygen depletion, and diseases when consumed. This resulted in the need to treat water to make it usable for domestic purposes. Nitrates, nitrites, and other nitrogen compounds cannot be removed by physical methods like boiling. Therefore, various chemical methods like ion exchange and reverse osmosis are employed for denitrification but are not eco-friendly as they produce nitrogen-rich waste streams. On the other hand, biological denitrification doesn't produce any harmful effluents. Biological denitrification reduces nitrogenous compounds like nitrates from water to nitrogen gas using microbes that use carbon as the energy source. Different Carbon sources show different results of denitrification rates depending on the amount of carbon available in them. In this paper, a review of how carbon sources like Wheat straw, Sawdust, and Biodegradable Plastic affect the denitrification process is studied.

Keywords: denitrification; carbon sources; wheat straw; sawdust; biodegradable plastic.

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Conflicts of Interest

The authors declare no conflict of interest.