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## NUTRIENT REMOVAL IN DIFFERENT KINDS OF ARTIFICIAL WETLANDS

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### ABSTRACT

*NH<sub>3</sub> volatilization, nitrification, denitrification, nitrogen fixation, plant and microbial uptake, mineralization (ammonification), nitrate reduction to ammonium (nitrate-ammonification), anaerobic ammonia oxidation (ANAMMOX), fragmentation, sorption, and desalination are just a few of the processes that affect nitrogen removal and retention during wastewater treatment in constructed wetlands (CWs). However, only a few procedures remove complete nitrogen from wastewater, whereas the majority of activities just transform nitrogen to other forms. Total nitrogen removal ranged between 40 and 55 percent in the investigated kinds of built wetlands, with removed load ranging between 250 and 630 g N m<sup>2</sup> yr<sup>-1</sup> depending on CW type and inflow loading. The mechanisms that cause the elimination, on the other hand, vary in magnitude across systems. Due to their inability to offer both aerobic and anaerobic conditions at the same time, single-stage artificial wetlands cannot achieve significant total nitrogen removal. Vertical flow built wetlands effectively remove Ammonia-N, however denitrification is extremely restricted in these systems. Horizontal-flow built wetlands, on the other hand, offer favourable circumstances for denitrification, but their capacity to nitrify ammonia is restricted. As a result, several kinds of built wetlands may be mixed to take use of the distinct benefits of each system. The phosphorus cycle in soil differs significantly from the nitrogen cycle. There are no valency changes during inorganic P biotic absorption or organic P breakdown by microbes.*

**KEYWORDS:** *Constructed, Wetlands, Nitrogen, Phosphorus, Standing Stock, Wastewater.*

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