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A Review of the Factors That Influence on Nutrient Removal in Upflow Filters

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Abstract : Phosphate, ammonium, and nitrates are forms of nutrients; they are released from different sources. High nutrient levels contribute to the eutrophication of water bodies by accelerating the extraordinary growth of algae. Recently, many filtration and treatment systems were developed and used for different removal processes. Due to enhanced operational aspects for the up-flow, continuous, granular Media filter researchers became more interested in further developing this technology and its performance for nutrient removal from wastewater. Environmental factors significantly affect the filtration process performance, and understanding their impact will help to maintain the nutrient removal process. Phosphate removal by phosphate sorption materials PSMs and nitrogen removal biologically are the methods of nutrient removal that have been discussed in this paper. Hence, the focus on the factors that influence these processes is the scope of this work. The finding showed the presence of factors affecting both removal processes; the size, shape, and roughness of the filter media particles play a crucial role in supporting biofilm formation. On the other hand, all of which are effected on the reactivity of surface between the media and phosphate. Many studies alluded to factors that have significant influence on the biological removal for nitrogen such as dissolved oxygen, temperature, and pH; this is due to the sensitivity of biological processes while the phosphate removal by PSMs showed less affected by these factors. This review work provides help to the researchers in create a comprehensive approach in regards study the nutrient removal in up flow filtration systems.

Keywords : nitrogen biological treatment, nutrients, psms, upflow filter, wastewater treatment
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