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Chemical and physical characteristics of dune sand filters after operation

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ABSTRACT

Wastewater flow through a sand filter causes variations in the physical and chemical properties of the filter media. The objective of this study was to investigate and characterize the physical and chemical properties of dune sand filters after a certain period of operation. Lab-scale studies were performed using four dune sand filter columns for treating wastewater. The column was split into ten layers; each of which was through physical and chemical analyses after a certain operational period. It was observed that 34%–51% of the organic matter in the column was found in the top layer. The flow of wastewater caused a deposition of limestone and fine particles onto the filter. There was a noticeably low pH in the upper layers of the columns due to the high amounts of organic matter. Lastly, the virgin sands were more saturated in salts than the used sand after operation.

Keywords: Wastewater treatment; Biological sand filter; Organic matter accumulation; Dune sand

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