

Technologies for Phosphorus Removal from Wastewater: Review

Authors : Thandie Veronicah Sima, Moatlhodi Wiseman Letshwenyo

Abstract : Discharge of wastewater is one of the major sources of phosphorus entering streams, lakes and other water bodies causing undesired environmental problem such as eutrophication. This condition not only puts the ecosystem at risk but also causes severe economic damages. Stringent laws have been developed globally by different bodies to control the level of phosphorus concentrations into receiving environments. In order to satisfy the constraints, a high degree of tertiary treatment or at least a significant reduction of phosphorus concentration is obligatory. This comprehensive review summarizes phosphorus removal technologies, from the most commonly used conventional technologies such as chemical precipitation through metal addition, membrane filtration, reverse osmosis and enhanced biological phosphorus removal using activated sludge system to passive systems such as constructed wetlands and filtration systems. Trends, perspectives and scientific procedures conducted by different researchers have been presented. This review critically evaluates the advantages and limitations behind each of the technologies. Enhancement of passive systems using reactive media such as industrial wastes to provide additional uptake through adsorption or precipitation is also discussed in this article.

Keywords : adsorption, chemical precipitation, enhanced biological phosphorus removal, phosphorus removal

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020