Talk

COMBINED APPLICATION OF CHEMICAL AND BIOLOGICAL COMPOUNDS FOR THE REDUCTION OF PHOSPHORUS IN WASTEWATER AND BIOLOGICAL FANGES

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ABSTRACT

Motivation: Nowaday wastewater treatment is a really important topic that is receiving a lot of attention due to the need of continuously finding and improving mechanisms and new techniques that allow us to eliminate as much organic matter, metals, and other toxic compounds as possible of the drinking waters and that are discharged to the riverbeds. Phosphorus is one of the elements that usually cause more problems when treating these waters. The joint use of chemical and organic compounds that have coagulant and flocculant capacity can help to reduce the use of these chemical compounds, which can leave certain contaminating residues, such as the cost in these processes. This could be a viable and cheap alternative in the field of wastewater treatments to reduce the presence of these organic compounds.

Methods: The Jar-test technique was used to carry out the wastewater tests, whereby increasing concentrations of different chemical and organic compounds were added to a fixed amount of decanted water to verify the change in phosphorus concentration that was given in each of the mixtures and check if there is a reduction in the concentration of this element and if this happens to obtain the optimal dose, with the aim of optimizing the process. Complementarily, the pH, turbidity and conductivity were measured to see how these parameters were affected.

Results: The results obtained show that various organic compounds, like cellulose and starch, that are very cheap and easy to produce (some are even considered as wastes for some industries), can be used to decrease the concentration of phosphorus in sewage from wastewater treatment plants when used together with chemical compounds. However, more studies are required due to the characteristics of each water and the different organic and chemical compounds.

Conclusions: The use of biological coagulants in combination with chemical ones could mean a new study field that has an enormous economic and environmental potential. However, the few studies carried out require further investigation of combinations with greater potential as well as in which type of water each one works better in order to optimize the process in each treatment plant according to their needs.

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