

Removal of Nitrates from Contaminated Water by Using Solid Waste Bio-adsorbents

Subhashish Dey* and Sk. Rabbani basha

Department of Civil Engineering, Gudlavalleru Engineering College, Andhra Pradesh, India

*Corresponding author

ABSTRACT

The presence of pollutants in aqueous solution mainly from hazardous heavy metals and metalloids is an important environmental and social problem. The nitrate presence in water is one of the serious groundwater contaminants in the rural areas. A nitrate is regulated in drinking water quality primarily because excess amounts can cause methemoglobinemia disease. The biological effects of nitrates in humans after acute exposures are dose-related they depend on the ambient concentration; the amount is taken by the body and duration of exposure. Biosorption is a physiochemical process that occurs naturally in certain biomass which allows it to passively concentrate and bind contaminants onto its cellular structure. It is metabolically passive process not require energy and amount of contaminants in sorbent can remove is dependent on the kinetic equilibrium and composition of the sorbents at cellular surface. Every biosorbent had different physical, chemical and biological properties for heavy metals removal from the water. The oxygen functional groups are very important characteristics of the biosorbents because they determine the surface properties and hence their quality as biosorbents. From the biosorption isotherms describe how the sorbate molecules are distributed between the liquid phase and solid phase when the system reaches equilibrium. The process can be made economical by regenerating and reusing of biosorbent after removing the heavy metals. Various bioreactors can be used in biosorption for the removal of metal ions from large volume of water.

Keywords: Nitrates, Biosorptions, Kinetic equilibrium, Isotherm data and Regeneration

