

PHYSICOCHEMICAL METHODS OF NITRATES REMOVAL FROM WASTEWATER

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Abstract

Nitrate(V) ions in surface water and sewage are pollutants, which excessive concentration have a negative impact on aquatic ecosystems. Due to the chemical properties, removal of nitrates from wastewater is a difficult process. In the municipal sector, biological denitrification (activated sludge) is the most commonly used process. However, in the case of industrial wastewater, where inhibiting substances or substances toxic to microorganisms are present in wastewater, it is necessary to use other types of methods.

It is possible to distinguish here methods based on physicochemical processes, in particular: physicochemical separation, chemical or electrochemical reduction and oxidation under supercritical conditions. At present, membrane methods and ion exchange processes are used mainly in the industrial sector because of the high knowledge of the technology and the amount of applications used. Intensive studies are also being carried out on methods using chemical reduction processes, where greatest advantage is the ability to transform nitrates to neutral molecular nitrogen.

Keywords: Chemical reduction; Chemical denitrification; Nitrates; Nitrates removal.