

## MODERN METHODS OF WASTEWATER TREATMENT FROM NICKEL AND PHOSPHORUS COMPOUNDS

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Patented technical solutions for the last 17 years for wastewater treatment from hazardous nickel and phosphorus compounds were reviewed in the paper.

So, a method of wastewater treatment from phosphorus compounds was proposed using the method of contact coagulation of biologically treated wastewater with phosphogypsum and deep post-treatment using sludge from the production of calcium nitrate or a mixture of ferric chloride with aluminum sulfate. This allows achieving a degree of purification from phosphates of up to 99.1 – 99.6 % [1, 2, 3].

The inventor Franchuk G.M. with co-authors developed a method for wastewater treatment from nickel compounds by their adsorption by a clay absorber. The efficiency of wastewater treatment from nickel compounds is 50 – 85 % [4].

The author Goncharuk V.V. with colleagues proposed a method for purifying industrial and domestic wastewater from phosphates by sequentially filtering it through a sand filter and ceramic tubes and reverse osmosis treatment. This method allows you to obtain technical water [5].

A number of authors focused on improving the hardware design of treatment facilities. They proposed a new design of a bioreactor for purifying wastewater from phosphorus compounds, as well as a method for circulating water and a sludge mixture [6, 7, 8].

A new method for obtaining hybrid halloysite-polyaniline composites for wastewater treatment was also presented. These composites adsorb both cationic and anionic pollutants. They are universal adsorbents. [9]

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