AN EFFECTIVE WAY OF REMOVING ORGANIC CHEMICAL CONTAMINANTS FROM WASTEWATER

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Removing the dissolved organic impurities, and phenol in particular, from wastewater remains an important and difficult problem despite the big number of research. Technology of water purification requires specific conditions that are hard to realize practically. At the same time many effective methods of wastewater purification are quite expensive and consider using deficient reagents that need to be recovered as well as the waste disposal. All these factors are challenging for the most facilities. Accorting to that, development of new effective ways of wastewater purification is considered an important task. The most common destructive methods of purification are electrochemical, electrocatalytic, and reactive redox-oxidative destruction [1]. Electrochemical destruction has been considered the most effective way for treating the organic impurities in wasterwater [2]. The volumetric micro-arc discharge method of wastewater treatment is also promising. The efficiency of this method is ensured by high pressure and temperature in the discharge zone and significant specific power [3]. The efficiency of a certain electrochemical technology of wastewater treatment is based on the competent choice of anode material because this factor may have a significant affect on the construction of the electrolyzer, the specific electricity consumption and nature of electrode reactions [3].

Electrolytic treatment of wastewater containing phenol is significantly affected by electrode materials and conditions of process. Also, addition of so-called "active chlorine" that is provided by adding sodium chloride, also makes positive affect on the degree of water purification. It has been concluded that RuO2/TiO2 anodes are the most effective in reaction of "active chlorine" release comparing to other electrode materials. In addition to that anodes of this type require a high concentration of chlorine ions in solution. If the concentration of such ions is low, oxygen release becomes a dominant anodic process which cause a destruction of an active layer of RuO2/TiO2. Graphite and coke electrodes are less active than RuO2/TiO2 but they do not require big concentration of chloride ions and can be used as a bulk anode.

References:

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