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WASTE WATER PURIFICATION FROM ACTIVE DYES

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Abstract. In this work, the composition and nature of organic compounds formed during the processing of model solutions of 6 brands of active triazine dyes with a concentration of 16 g / l with sodium hypochlorite were studied by the spectroscopic method and by the method of gas-liquid chromatography [2,3,4].

The study of the IR spectra of aqueous solutions of active dyes after oxidative treatment showed the absence of aromatic structures and the presence of carboxylic acids and acetone. The identification of acetic acid in aqueous solutions was carried out on a "Khromos GC 1000" gas-liquid chromatograph equipped with a flame ionization detector on Hezasorb AW columns impregnated with 15% Tween 80. A well reproducible peak was obtained, which was identified as the acetic acid peak.

To determine the volatile compounds contained in aqueous solutions of active dyes after hypochlorite treatment, a chromatographic distribution method for analyzing equilibrium vapor phases over a liquid was used. The vapor sample was analyzed on a "Khromos GC 1000" gas-liquid chromatograph on a Polychrome 2 column impregnated with 1,2,3-tris- (2'-cyanoethoxy) propanol). Identification of the detected volatile compounds (peaks X₁ and X₂) was carried out by the relative retention time and by the method of addition of standard samples. According to the results obtained, peak X₁ was identified as methylene chloride. Determination of the relative distribution coefficients in the liquid-vapor system made it possible to conclude that this peak X₂ corresponds not to an individual substance, but to a mixture of acetone and chloroform.

Thus, our studies show that the oxidation of all the studied triazine active dyes with sodium hypochlorite leads to the destruction of the chromophore system of the dyes with the destruction of aromatic structures and the formation of acetone, methylene chloride, chloroform, and acetic acid. Since methylene chloride and chloroform are biologically stable compounds, it is recommended to carry out sorption purification of discolored wastewater from chloromethane before sending it to biological treatment facilities.

References

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