

## **The Phenol Sorption from Water Solution by Zeolites and its further Chemical Conversion**

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Organic compounds entering the soil and groundwater system is considered a serious problem because it has some acute and long term toxic effects. Phenol is an important substance for chemical synthesis. The removal of phenols from wastewater is a serious problem, as phenol is present in most industrial wastewater. Wastewater treatment from phenol is described here. The study has investigated the absorptive abilities of zeolites as sorbents available in Armenia. The technological stability of zeolites as sorbents is determined first by characteristics such as mineral and chemical composition and sorptional ability, and then by mechanical and physical characteristics and following from them, filtering properties. Natural zeolites, e.g. zeolite-containing tufas are considered to be a promising material for raising the quality of raw material and semi-finished and finished products in the field of drink production. The results of the research revealed the phenolic removal from wastewater treatment and further chemical conversion of sorptioned on zeolites phenol via alkylation and ozonation reactions. The goal of chemical conversion is to recover zeolites for reuse in adsorption processes. It has been found that some natural zeolites such as clinoptilolite is a good adsorbent for phenol adsorption from organic and water solutions. The chemical conversion is better for alkylation of sorptioned phenol by alcohols. In the output of this reaction the industrial importance of methyl- or ethyl derivatives of phenol has been observed. The ozonation gives the possibilities to destroy phenol until it becomes an un-toxic compound. The present research shows the ability of removing phenol from water solutions by natural zeolites, and the possibilities of recycling zeolite and using sorptioned phenol.

**Keywords:** Phenol, Wastewater, Alkylation and ozonation reactions