

## Abstract

Industries such as petrochemical industry, wood processing industry, coal conversion industry, refineries etc. discharges a large quantity of effluent that contains variety of pollutant, which can deteriorate the water environment. Out of these pollutants phenolic compounds are the major (priority) pollutants, which can be found in such effluent, and trace quantities of these pollutants may harm biological life.

Effluents from such industries contain mixture of phenolic compound such as phenol, nitrophenols,

chlorophenols, and cresol etc. A study has been done to investigate the synergic effect of pollutants on the adsorption of other pollutants. It is observed from the study that the adsorption of phenol enhances in the presence of *p*-nitrophenol as

compared to single solute adsorption of phenol using activated carbon as an adsorbent in batch reactor. *Rathi Puranik Model* for single solute batch operation is extended for multi-solute batch operation by incorporation of "*Enhancement Factor*" in the rate expression of single solute adsorption of phenol. The error analysis shows that *Rathi Puranik Model* can satisfactorily predict the concentration of any pollutant in the presence of other pollutant.

*Key Words :* petrochemical industry, *Enhancement Factor*, nitrophenols, chlorophenols

Study on Air Emission in a Petrochemical Complex