Adsorption kinetics of anthracene and phenanthrene in different soils of Attock Refinery Limited (ARL) Rawalpindi, Pakistan

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\textbf{A B S T R A C T}

The present study was envisaged to examine the adsorption kinetics of two polycyclic aromatic hydrocarbons anthracene and phenanthrene on soil from different areas of Attock Refinery Limited (ARL), Rawalpindi, Pakistan. Surface soil samples were characterized for their physicochemical properties. Batch experiments were designed to study adsorption capacities of selected PAHs to investigate the effect of variation in pH, initial concentration and contact time. The results revealed the high initial concentration, acidic pH and high organic matter contributes to higher adsorption capacities. The maximum adsorption exhibited for anthracene and phenanthrene under optimum conditions of pH and initial concentrations was 95.2\% for anthracene and 95.4\% for phenanthrene, respectively. The experimental results are described by Freundlich and Langmuir isotherms. Sorption of anthracene and phenanthrene displayed a linear isotherm. Experimental result shows that high organic matter soil may be used to control the mobility of soil PAHs under appropriate conditions to decrease PAHs contamination.

\textbf{Keywords:} PAHs; Adsorption; Kinetics; Industrial soil; Organic matter; Batch experiments and isotherm

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