



Hexachlorocyclohexane (HCH) isomers adsorption from water solution using natural sorbent

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ABSTRACT

Dozens of thousands of tons of pesticide waste have been stored since 1950's. Corrosion of concrete bunkers and wells where the outdated pesticides are deposited causes the risk of toxic leakage due to deteriorating conditions of these constructions. Such hazardous spill might be transported by underground waters in the form of so-called underground inflow and subsequently might reach a network of surface waters. Evaluating the adsorption potential of natural sorbent for pesticide was the main goal of this research. Adsorption balance was examined in order to analyze the influence of the adsorption mechanism of isomers HCH molecules on vermicompost. The adsorption of isomers α -HCH, β -HCH and γ -HCH (lindane) isotherms by vermicompost at constant temperature was experimentally tested. The Freundlich, Langmuir, Temkin, Jovanovic and BET's adsorption isotherm models describe experimental data within the acceptable error ranges. The Freundlich, Jovanovic and Temkin models proved to be more suitable for the experimental data. The isotherms' form indicates that isomers HCH is adsorbed as a monolayer, therefore no obstacles occur in order for water and pesticide molecules to cover the adsorption surface.

Keywords: Sorption; Pesticide; Isotherm
