Binary Adsorption and Desorption Dynamics of TCE and Water Vapor Mixtures on a Hydrophobic Activated Carbon

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Activated carbon has been extensively used to purify indoor air and industrial gas streams containing a variety of organic chemicals and pollutants. Water vapor is frequently present at high levels in the atmosphere and may influence the adsorption properties of activated carbon. The presence of water vapor can have a severe negative influence on the adsorption behaviour of activated carbon filters. Moreover, water adsorption in activated carbon has been one of the most important problems for the removal of VOCs from air. Thus, in this study, the competitive adsorption properties including adsorption equilibrium and column dynamics of TCE and water vapors on a hydrophobic activated carbon were investigated. TCE was chosen as a representative of VOCs.