



## Study on triazophos adsorption behavior on the multi-walled carbon nanotubes

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### ABSTRACT

A commercial multi-walled carbon nanotube (MWCNT) was selected as an adsorbent to remove triazophos, which is a representative insecticide. The MWCNT was characterized by transmission electron microscopy, Fourier transform infrared spectroscopy and Raman spectroscopy. The effect of initial pH value, ionic strength and adsorbent dosage on the adsorption capacity of triazophos was optimized. The adsorption behaviors of triazophos on MWCNT including adsorption kinetics, isotherms and thermodynamics were investigated. The results demonstrated that the adsorption kinetics belonged to the pseudo-second-order and the adsorption rate constant was up to 1.7586 g/min; correlation coefficient was above 0.997. The Freundlich model fits better than Langmuir model, and the maximum adsorption capacity was 42.02 mg/g. The adsorption of triazophos onto MWCNT was thermodynamically feasible and spontaneous.

*Keywords:* Multi-walled carbon nanotubes; Organophosphorus pesticides; Triazophos; Adsorption

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