ATRAZINE ADSORPTION ON SEVERAL EFFICIENT ADSORBENTS STUDIES

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Abstract

Widely used selective herbicides for weed and grasses growth control in agriculture, being relative persistent in water, atrazine represents a risk for the equilibrium of numerous ecosystems. The International Program on Chemical Safety, as measure to prevent the environmental pollution, recommended an exposure level till 0.1 μg atrazine / L and consequently, a sensitive control of their environmental amount and an efficient removal procedure are simultaneously necessary. The atrazine adsorbtion performance investigations, expressed by the adsorbtion coefficient K_f (l/g) and the amount of pesticide adsorbed per g of adsorbent, Q_e (mg/g), elaborated in this work for several adsorbents such as ZrO_2, $SiO_2 \bullet ZrO_2$, $ZrO_2 \bullet MgO$, ZnO, TiO_2, Al_2O_3, Zeolyte Y Na and SK 40, Kieselgur, demonstrated that the most increased affinity for atrazine have ZnO (K_f =4.4371 g^{-1} and Q_e = 4.0396 mg g^{-1}) and Zeolyte SK 40 (K_f =4.666 g^{-1} and Q_e = 4.3038 mg g^{-1}) compared with the other materials used in this attempt (1.2 - 3.9 mg / g ZrO_2, $SiO_2 \bullet ZrO_2$, $ZrO_2 \bullet MgO$, TiO_2, Kiselgur) and also with literature data (K_f =3.06 g^{-1} diatomaceous earth, wood charcoal Q_e = 0.8 mg g^{-1}, rubber granules Q_e = 0.4 mg g^{-1}). On the other hand, it was proved that Freundlich model fitted well with experimental data for both the most efficient cases and isotherm exponent for these compounds, being dependent on their intrinsic physico-chemical properties, suggest that the amount of adsorbate tends to increase at equilibrium concentration.

Key-words: *atrazine, adsorbent, environmental pollution.*