Adsorption of Dyes and Heavy Metals From Water Using a Mixture of Jordanian Diatomite and Bentonite

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Adsorption of Dyes and Heavy Metals From Water Using a Mixture of Jordanian Diatomite and Bentonite. Sewar Sadi Kamel Alsalal. Jordan/Aqaba. Dyes, and metal ions represent common and dangerous pollutants. This study aimed to remove 1000 and 2000ppm of copper concentrations and 10ppm of crystal violet dye concentrate from water using a mixture of Jordanian diatomite and bentonite. The mixture (BD-H3PO4) was prepared in three ratios (B/D): 1/1, 1/3, 3/1. They were mixed together and treated with phosphoric acid. Also, two other samples of bentonite and diatomite treated with phosphoric acid were prepared separately (B-H3PO4) and (D-H3PO4). To clarify the effect of acid, the study was conducted on all five samples before and after acid treatments. The results showed the 1000ppm of copper and 10ppm of crystal violet removed at 99.9%, and 95.5% from the 2000 ppm concentration of copper. It was found that all sorbents could give almost comparable results in copper before or after the acid treatment. but we note that the modified absorbent materials have a better effect in removing the dye. for the samples contents XRD, XRF, and FTIR analyses were carried out. A prototype was created to demonstrate how to remove metal ions and dyes from aqueous solutions using the mixture. conclusion: Jordanian (BD) mixture effectively remove copper from water without the need for acid treatment. Therefore, fixing this issue was quite affordable. For effective dye removal, the treated mixture (BD-H3PO4) can be used. To address the problem and balance natural resource use so that it does not rely heavily on one resource and consumes it in huge amounts, a (BD) and (BD-H3PO4) mixture can be used.

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