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## Sorption of Pb(II), Cd(II), and Ni(II) Toxic Metal Ions by Alginate-Bentonite

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### ABSTRACT

The sorption of Pb(II), Cd(II), and Ni(II) toxic metal ions from aqueous solution by composite alginate-bentonite and alginate was investigated. The affinity and sorption capacity of the toxic metal ions for both type of samples were evaluated. The Langmuir maximum sorption capacity for each toxic metal ion increased for alginate-bentonite as compared to alginate. However, affinity for toxic metal ion remained unchanged for both alginate-bentonite and alginate in the order of Pb(II) > Cd(II) > Ni(II). Alginate-bentonite also shortens the duration required for complete sorption. Elementary mapping analysis depicts the gradient diffusion of toxic metal ions into the centre of alginate-bentonite beads indicated that sorption was contributed by surface adsorption and diffusion.

### KEYWORDS

Toxic metals; Alginate; Bentonite; Wastewater

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