

عنوان مقاله:

Study on the parameters of airborne hexavalent chromium removal by chitosan biopolymer

محل انتشار:

اولین همایش تخصصی مهندسی محیط زیست (سال: 1385)

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خلاصه مقاله:

Airborne hexavalent chromium is a known human respiratory carcinogen and allergen. Many workers are exposed to hexavalent chromium in various processes which chromium electroplating plants are the most common. In this study, the feasibility of a new control approach to remove this pollutant using chitosan beads as a biosorbent was investigated. Hexavalent chromium sorption was studied relative to pH, pollution concentration, sorbent concentration, temperature, and air velocity using one factor at a time approach and Taguchi experimental design. Polluted air with different chromium mist concentrations ($10-5000 \mu\text{g}/\text{m}^3$) was contacted to chitosan beads ($3.3-20 \text{ g}/\text{l}$), floating in distilled water with adjusted pH (3-7), using an impinger at different temperatures (20 and 35°C), and various velocities (1.2 and $2.4 \text{ m}/\text{s}$). The ANOVA test result showed that, there were statistical significant differences between factor levels except optimized pH levels. The higher ions removal efficiencies were achieved at lower levels of air velocities, pollution concentrations, and higher levels of solution pH values, temperatures, and sorbent concentrations.

کلمات کلیدی:

Chitosan, Biosorbent, Hexavalent chromium mist, Control, Removal

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