

HEXAVALENT CHROMIUM REMOVAL FROM AQUEOUS SOLUTION AND NATURAL ATTENUATION IN SOIL BY ADSORPTION. S.Musayev - Department of Civil and Environmental Engineering, University of Connecticut, Storrs, CT, USA I.Musaev - TIAME

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Abstract

Rapid industrialization and population growth bring forward to use heavy metals in the environment and food chain. Discharge of untreated or partially treated wastewater having these toxic metals even cause more problems to water bodies and human health. Distribution of adsorbate molecules between the solid and liquid at equilibrium can be studied by adsorption isotherm models (Tella et al., 2014). Equilibrium is when concentration of adsorbate in solution is in balance with on the liquid adsorbate interface. The results show that Cr(VI) removal rate increased with adsorbent dosage till it reached equilibrium. Contact time also indicate efficiency within 60 to 70 minutes. Under certain conditions chromium hexavalent can be reduced to less toxic states in the soil by natural attenuation. Relying on this natural attenuation chromium contaminated sites can be remediated with less expense. If this method is applied, then what natural reductants are available within the aquifer should also be thoroughly studied. Reducing capacity should not prevail oxidation capacity. To study Cr (VI) reducing capacity of the aquifer by mass balances when relying on the aqueous concentrations from monitoring wells, the network must be sufficiently dense to estimate the correct Cr(VI).

Key words: Natural attenuation, food chain, heavy metals, toxic metals, adsorbent dose, adsorption isotherm, groundwater and soils.

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