

Removal and Recovery of Chromium from Contaminated Agricultural Soil

G. Muthuraman

Department of Chemistry, Presidency College, Chennai-05

Email ID: raman.gm@gmail.com

ABSTRACT

Rapid urbanization and industrialization have increased the amount of hazardous inorganic and organic pollutants released into the environment. Metallic ions of mercury, cadmium, lead, chromium, copper, nickel, zinc, and other elements are examples of inorganic toxicants. Ecosystems may be at risk due to the rising levels of harmful metals released into the environment as a result of industrial activity. Using supported liquid membranes (SLM), chromium contamination in agricultural soil was removed and recovered. One of the most often utilized extractant in a variety of industries is tributyl phosphate (TBP). 8.75×10^{-4} M of Cr(VI) was present in the feed phase, and 0.1 M of NaOH was used as a stripping agent. was employed to assess the assistance. For the transport investigation, PTFE plain membranes of 0.2, 0.5, and 1.0 mm were chosen. According to the study, a membrane with 1.0 m pore size has a permeability coefficient of 3.2×10^{-6} m/s, which is more efficient than membranes with 0.5 m and 0.2 m pore sizes, which have permeability coefficients of 2.8×10^{-6} m/s and 2.0×10^{-6} m/s, respectively. Using the same SLM for various runs allowed researchers to examine the stability of the PTFE-TBP system. After ten consecutive trials without reimpregnation of the TBP carrier, SLM stability was pretty impressive. It was discovered that the developed SLM system, which uses TBP as a carrier, recovers chromium from contaminated agricultural soil quite effectively.

Keywords: Toxicant, agricultural soil, liquid membrane, permeability, transport, reimpregnation

