

Review and assessment of the separation and recovery of zinc from the aqueous stream

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ABSTRACT

Effluents from industries include high levels of toxic heavy metals and are considered to be one of the serious sources of water pollution. Galvanizing, electroplating, tannery, textile, and dye industries are the major sources of heavy metal contaminants. To protect the environment from the toxic effects of the effluents, it is highly necessary to treat this industrial effluent before discharging it into the water bodies. This paper focuses on the critical analysis of conventional separation processes such as adsorption, chemical precipitation, coagulation and flocculation, and membrane separation processes for the separation and recovery of zinc from wastewater. This paper deals with the analysis of effective separation technologies for the removal of zinc from industrial effluent. The advantages and limitations of the technologies for the separation and recovery of zinc have been compared and critically analyzed. This paper also provides the outline of hybrid membrane technology in the ultra-filtration process known as complexation-enhanced ultrafiltration for the separation and recovery of zinc from the aqueous stream.

Keywords: Zinc; Heavy metals; Adsorption; Chemical precipitation; Membrane processes

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