**Treatment of leather industry wastewater and recovery of chromium with sequential** **nanofiltration/reverse osmosis membrane processes**

**Delia Teresa Sponza**

Dokuz Eylül University, Engineering Faculty, Environmental Engineering Department; Buca- İzmir, Turkey

**Abstract:**

In this study tannery industry wastewater was treated effectively with sequential and reverse osmosis membrane processes. Nanofitration membrane consisting of NF90 while the reverse osmosis membrane conssting of SW30. The physicochemical properties of both membranes were analyzed with FTIR and SEM to confirm the process of surface modification after treatment. This sequential membrane system was found to be highly effective for chromium, Na+ , K+  Mg2+ and Ca2+ ( 99,90%) removals. The effects of volume concentration factor  (0,5, 1,0, 2,0), permeate flux (8 16, 35, 55 L/m2h),transmembrane pressure ( 10, 25 and 35 bar) on the yields of COD, BOD5, TSS and chromium yields were investigated. The variatons of the osmotic pressure difference, volume concentration factor depending to the ratio of initial volume of feed divided by the retentate volume, and selectivity on theremovals of pollutants in nanofiltration/reverse osmosis membrane processes were researched. Ca, S, Mg, Na, K and Cr yields were 99,90% in the penetrate of reverse osmosis while the chromium was concentrated in nanofiltration/reverse osmosis retentates to 45 mg/l . The effluent of reverse osmosis permeate can discharged directly into receiving mediaand can be used as irrigation water or can be reusedsince have an A quality.

**Biography of presenting author**

Prof. Dr. Delia Teresa Sponza is currently working as a professor at Dokuz Eylül University, Department of Environmental Engineering. Scientific study topics are; Environmental engineering microbiology, Environmental engineering ecology, Treatment of fluidized bed and activated sludge systems, Nutrient removal, Activated sludge microbiology, Environmental health, Industrial toxicity and toxicity studies, The effect of heavy metals on microorganisms, Treatment of toxic compounds by anaerobic / aerobic sequential processes, Anaerobic treatment of organic chemicals that cause industrial toxicity and wastewater containing them, Anaerobic treatability of wastewater containing dyes, Treatment of antibiotics with anaerobic and aerobic sequential systems, Anaerobic and aerobic treatment of domestic organic wastes with different industrial treatment sludges, Treatment of polyaromatic compounds with bio-surfactants in anaerobic and aerobic environments, Treatment of petrochemical, Textile and olive processing industry wastewater by sonication, Treatment of olive processing industry wastewater with nanoparticles and the toxicity of nanoparticles. She has many international publications.

**Details of presenting author to be mentioned in the certificate:**

Name: Delia Teresa Sponza

Affiliation: Prof.Dr. İn Environmental Engineering Department, Engineering Faculty, Dokuz Eylül University

Country:Turkey

**Other Details:** Session Name: Environmental Engineering gülümserken, kişi, poz içeren bir resim

Açıklama otomatik olarak oluşturuldu

Email: delya.sponza@deu.edu.tr

Alternative email:delia.sponza@deu.edu.tr

Contact Number:00905356932709

Twitter/Facebook/LinkedIn:

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