Waste water treatment through MWCNTs nanomembranes

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Abstract

Nanomembranes were fabricated with MWCNTs and cotton for mesh and fiber support to remove pollutants and meet the World Health Organization (WHO) parameters for drinking water. After the nanofiltration process the following results were obtained: Escherichia Coli was reduced from 6.8 per 100 ml to 2.0 per 100 ml, Turbidity obtained after nanofiltration was reduced from 4.04 to 0.23 mg/l; Magnesium content was reduced from 93.14 mg/l to 13.62 mg/l, total hardness was reduced from 450 mg/l to 132 mg/l, the color diminished from 58 units to 1.0 units, Ph got reduced from 6.87 to 6.44. The results show that the quality of water can be improved using multi wall carbon nanotubes to meet drinking water requirements. In addition, electric current was used through membranes to create electro separation of pollutants and let filtrated water to pass. The results also showed water with less pollutant, better color, and less turbidity after the nano filtration process. This is an approach in the use of nanotechnology for waste water treatment and increase the access to drinking water to more people around the World.This research was performed at School of mechanical engineering and Engineering research center from University of San Carlos of Guatemala.