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Waste water treatment by adsorption in pulverized carbon

Ana Karla Costa de Oliveira

Federal University of Rio Grande do Norte, Brazil

Produced water from oil wells is generally reutilized for injection, reuse or discarded. For any of these applications, the water must be treated, considering both the environmental impact (guidelines established by CONAMA 357) and preservation of the industrial components through which the water will be handled. This study aimed to assess the most efficient oil removal method between liquid-liquid extraction and adsorption at the ranges studied. Removal by liquid-liquid extraction uses hexane and kerosene, while the other process involves adsorption in activated carbon with different particle sizes. The study was conducted with PETROBRAS oil well samples from Guamaré, Rio Grande do Norte state, an onshore production area in Brazil. The best results were obtained with adsorption in pulverized carbon (99.2%), due to the large surface area of the material, which exhibit fine particle size. In the liquid-liquid extraction process, the best results for the sample range were around 78% oil removal using organic extractants.

karla.costa@ifrn.edu.br