

Removal of chlorinated contaminants from surfactant solution for the reuse of surfactant

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Surfactants are commonly used in the remediation of aquifer contaminated with dense non-aqueous phase liquids (DNAPLs). The separation of contaminants from the surfactants solutions used is essential for the successful remediation. In this research, pervaporation was investigated to decontaminate trichloroethylene (TCE) and tetrachloroethylene (PCE) from surfactant solution (Tween 80). TCE and PCE are most widely detected chlorinated contaminants and occasionally found at same sites. To see the effects of operation conditions, factors such as membrane thickness, temperature, flow rate, feed concentration and surfactant concentration were used in the experiment. Organic flux increased with temperature and membrane thickness. Because water flux increased at high flow rate, selectivity decreased. Above concentration of 2,000 ppm, selectivity declined due to membrane swelling. Finally all flux and selectivity of TCE was higher than PCE. The reason is the difference in the extracellular fraction of TCE and PCE.