In this work, composite membranes were prepared by chemical polymerization of a thin layer of substitute anilines (methylaniline and ethylaniline) in the presence of an oxidant on the surface polyvinylidene fluoride (PVDF) membrane support sheet. Poly-N-ethylaniline (P-EAn) and poly-N-methylaniline (P-MAn)/PVDF composite membranes were obtained from this polymerization. Scanning Electron Microscopy (SEM), Fourier Transform Infrared Spectroscopy (FTIR) and Atomic Force Microscopy (AFM) studies for composite membranes confirmed substitute anilines loading on the PVDF membrane. The membrane thickness and their ion-exchange capacities were also measured. Donnan dialysis experiments were performed using P-EAn and P-MAn/PVDF composite membranes for removal of chromium (III) from aqueous solution. The flux values (J) of Cr(III) were obtained at 25°C. The flux value of Cr(III) for P-EAn/PVDF composite membranes was higher than the other membrane because of the high ion-exchange capacity.