Films of low-density polyethylene grafted with various amounts of polyacrylic acid were prepared by the direct irradiation method, using a 10 MeV linear electron accelerator. Aqueous solutions of acrylic acid were used with FeSO₄ · 7H₂O as a redox system. The best graft/homopolymer ratios were obtained at radiation doses between 2 and 3 Mrad, at acrylic acid concentrations of 40–60% and at FeSO₄ · 7H₂O concentrations of 0.25-0.5% by weight. The grafted films were tested for reverse osmosis properties. A membrane with 60% polyacrylic acid content gave 87% salt rejection and a water flux of 0.75 × 10⁻⁵ gm/cm² per sec.