**Abstract:**

Technological advances in the past 30 years have boosted the use of membrane separation processes (PSM), important for its efficiency and flexibility of operation. These processes can be used in many types of separation, with some advantages over the usual separation processes. Nanofiltration (NF) is a membrane separation technique, which has properties intermediate between reverse osmosis and ultrafiltration in terms of separated species, because the average of the pores is in the range of ½ to 10 nanometers, and the separation occurs in function of load and size of the species. Usually removes species in solution with an effective diameter of about 1 nm or larger and multivalent ions to a greater extent than monovalent ions. The objective was to study the formation of biofouling on the surface of commercial nanofiltration membrane (Osmonics / GE) and surface membrane synthesized in our laboratory. The study was conducted in permeation system with filtration cell with tangential displacement of 15 bar for 8 days flow. DBNPA ((2,2-dibromo-3-nitrilopropionamide) was used as a biocide agent, and an anti-fouling, in concentrations of 5 and 300 ppm, respectively, added to the water coming from the Beach Sea Galleon, RJ .

The results demonstrated that there was no change in the flow and rejection of sulphate ions, even in the presence of anti-fouling. The count of aerobic, anaerobic and BRS (sulfate reducing bacteria) in seawater before and after using the DBNPA showed efficiency in controlling these groups of microorganisms and biofouling microbial consortium consisting of the existing in seawater.

**Keywords:** nanofiltration membrane, biofouling, biocide, sulfate reducing bacteria, seawater