

# Reverse Osmosis Membrane Cleaning Tips

For those of you who attended our training seminars, “Good to the Last Drop: The User’s Guide to Reverse Osmosis Systems”, this may be old information, but following are some practical suggestions for effective membrane cleaning from our friends at *Avista Technologies*. Effective membrane cleaning involves proper procedures combined with good chemistry specifically formulated to remove the foulant. One without the other can be the cause of an ineffective cleaning.

**Use proper chemical dilutions.** When diluting cleaners, take into consideration the total volume of water in the system including tank volume, pipe and/or hose volume and membrane vessel volumes. Table 1 gives a quick guide to membrane vessel volumes.

**Use proper flow rates.** The velocity of the solution across the membrane surface is critical. Clean 4” membranes at a flow of 10-12 gpm per pressure vessel. Clean 8” membranes at a flow of 35-40 gpm per pressure vessel. Full fit membranes require higher flow rates such as 60 gpm for an 8” pressure vessel.

**Always clean the membranes in parallel.** If necessary, separate the vessels so they can be cleaned in parallel. Never clean the vessels in series. If vessels are cleaned in series, it is difficult to ensure proper cleaning flow rates and pressures.

**Minimize cleaning pressure.** Clean at pressures less than 60 psig. This will minimize or eliminate the possibility of foulants being pulled down to the membrane surface by water permeating during a cleaning procedure.

**Heat the cleaning solution.** Heat the solution to the maximum temperature allowed by the membrane manufacturer.

## **Additional tips:**

1. Use only DI or RO permeate water to dilute cleaning solutions.
2. Reduce cleaner foaming by placing return lines below the water level in the CIP tank.
3. Use a combination of low and high pH cleaning solutions.
4. Use packaged cleaners!

*Avista Technologies* provides membrane-compatible antiscalants, packaged membrane cleaners, membrane-compatible coagulants and biocides, as well as off-site cleaning, membrane autopsies and testing.

For further information on Avista's products and services, for a customized cleaning procedure developed for your system, or for cleaning assistance/services, please contact Process Solutions, Inc. at 513-791-3338.