USEFUL FORMULAS

1 gallon	=	3.785 liters
1 grain per gallon	=	17.1 mg/liter
1 mg/liter	=	1 ppm (parts per million)
1 micromho/cm	=	.4 mg/liter as NaCl .65 mg/liter as ion .5 mg/liter as $CaCO_3$
TDS in ppm as $CaCO_3$	=	Conductivity (micromhos) x .5
Conductivity (micromho/cm)	=	$\frac{1}{\text{Resistivity (megohm-cm)}}$
Resistivity (megohm-cm)	=	$\frac{1}{\text{Conductivity (micromho/cm)}}$
Concentration Factor	=	Percent Recovery
Percent of Recovery	=	$\frac{\text{flow rate of product}}{\text{flow rate of feed}} \times 100$

Percent of Rejection = $\left(\frac{\text{Conductivity (micromho/cm) of feed - Conductivity of Product}}{\text{Conductivity of Feed}} \right) \times 100$

HARDNESS EQUATION:

(mg $CaCO_3$/l = 2.497 x Ca(mg/l) + 4.118 x mg(mg/l) = Hardness as $CaCO_3$ ÷ 17.1 = GPG.

CARBON SIZING EQUATION:

Empty bed contact time: $V = \frac{Q\ (EBCT)}{7.48}$

V = Volume (cu. ft)
Q = Flow
EBCT = Empty bed contact time needed.
NOTE: Recommended contact time is 6 minutes to remove free chlorine.
Recommended contact time is 10 minutes to remove chloramine.

RO SIZING EQUATION:

Total the flow needed for hemodialysis equipment, re-use equipment and other water uses. For a recirculating loop add 1 GPM to the total flow requirements to meet the minimum standard of 1.5 ft/sec through the loop.