

**Industrial Waste Treatment Plant Operator
EQUIVALENTS AND FORMULAS**

3.785 liters/gallon	453.6 gm/lb.
8.34 lbs/gallon	28.35 gm/oz
7.48 gallons/ft ³	12 inches/ft.
43,560 ft ² /acre	p = 3.14

Formulas that may be useful:

Volume of Rectangular Solid:	$V = LWH$
Perimeter of a Circle	$P = \pi D$
Area of Circle:	$A = \pi R^2$
Volume of Cylinder:	$V = \pi R^2 H$
Area of Trapezoid:	$A = 1/2(B + b) \times h$
Area of Triangle:	$A = 1/2 b \times h$
Manning Formula:	$Q = \frac{1.49 \times A \times R^{2/3} \times S^{1/2}}{n}$

Pounds/day = 8.34 x Flow, mgd x Concentration, mg/l

$F/M = \frac{\text{Pounds of BOD applied per day}}{\text{Pounds of MLVSS under aeration}}$

$MCRT = \frac{\text{Pounds of MLSS in secondary aeration tank and clarifier}}{\text{Pounds of MLSS leaving secondary per day in effluent \& WAS}}$

Water HP = $\frac{\text{Flow gpm} \times \text{total head ft.}}{3960 \text{ gpm-ft/Hp}}$

Brake HP = Power to electric motor x motor efficiency