Equivalent Inhabitants in Industrial Wastewater Treatment Plants

This calculation method can be used to estimate the quantity of NEPH ***E-LINE*** (Environment) ***Wastewaters*** and ***Hydrocarbons & Solvents*** products to use on a regular basis in industrial water treatment plants.

Parameters:

BOD_5:	plant measurement data
Throughput:	plant measurement data
Daily BOD_5 per Equiv, Inhabitant	60 g/day/Equiv. Inhab.
NEPH correction factor:	1.5
Product effectiveness:	1000 Equiv. Inhab./(Box/Month)

The formulas in use are the following:

$$\text{Equivalent Inhabitants} = \frac{BOD_5 \text{ (g/day)}}{\text{Equiv Inhabit. Coeff (g/day/Equiv. Inhab)}} \times \text{NEPH Correction Factor}$$

$$\text{Monthly Product Consumption} = \frac{\text{Equiv. Inhabit.}}{\text{Product Effectiveness}}$$

In case the treatment plant deals with organic substances, mud, wastewaters, etc. without any presence of oil, solvents or hydrocarbons, it is suggested the sole use of ***E-LINE Wastewaters*** units, spread uniformly over the month.

In case of industrial wastewaters with traces of hydrocarbons, a combination of ***E-LINE Wastewaters*** and ***E-LINE Hydrocarbons & Solvents*** should be used spread uniformly over the month. The ratio of the two products will vary as a function of the plant measurement data and must be optimized with tests and trials.
After an initial trial of approximately three months, always with the help of measurements, one can evaluate if the dosage can be reduced to find a steady state regime. Such steady state regime, with experience and continuous monitoring of the plant functioning points, could be even further modified, varying the dosage as a function of particular seasonal effects or circumstances.

Calculation Example:

Treatment plant working with a throughput of 1000 m3/day with a BOD_5 of 800 mg/l

800 mg/l are equivalent to 800 g/m3 (BOD_5 to deal with per cubic meter)

1000 m3/day x 800 g/m3 = 800.000 g/day (BOD_5 to deal with every day)

$$\frac{800.000 \text{ g/da7}}{60 \text{ g/day/Equiv. Inhab}} \times 1.5 = 20.000 \text{ Equiv. Inhab.}$$

$$\frac{20000 \text{ Equiv. Inhab.}}{1000 \text{ Equiv. Inhab./(Box/Month)}} = 20 \text{ Box/Month}$$

20.000 Equivalent Inhabitants require a dosage of 20 boxes of product to spread over the period of a month.