

CORRELATION BETWEEN TOTAL ORGANIC
CARBON(TOC) & CHEMICAL OXYGEN
DEMAND(COD) IN FIVE DIFFERENT WASTE
WATERS.

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PERMANENT REFERENCE

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ABSTRACT

The Chemical Oxygen Demand (COD) and Total Organic Carbon (TOC) are two important parameters that are used to estimate the degree of organic pollution in water bodies. The determination of COD is cumbersome, time consuming and generates toxic chromium waste. The operating cost is also high because of Ag_2SO_4 and consume more electricity for heating. On the other hand TOC is rapid, easy and does not generate toxic waste.

Correlation between COD & TOC for the under mentioned five different industrial effluents was investigated.

Thread dyeing.

Natural Product Processing.

Tourist Hotel.

Fruits & Vegetables processing.

Garment washing

These industries were selected because they are heavy polluters and cause demand for regular monitoring.

Known composition of synthetic samples having five different theoretical TOC made from Tris (hydroxymethyl) methylamine were analyzed for relationship between TOC & COD. The correlation coefficient, (r) determined by regression analysis of Tris (hydroxymethyl) methylamine was found to be 0.90. The correlation coefficient was also obtained for sample effluents from five different industries, viz Thread dyeing ($r=0.97$), Natural Product Processing($r=0.99$), Tourist Hotel(0.98), Fruits & Vegetables processing ($r=0.98$) and garment washing ($r=0.93$)

The TOC & COD varied with time in all five industrial effluents that were studied. However the ratio (TOC/COD) remained the same. Viz. Thread dyeing (3.3 ± 0.4), Natural product processing (3.3 ± 0.7), Tourist hotel (4.4 ± 0.4), Fruits & Vegetables processing (3.2 ± 0.3), Garment washing (2.9 ± 0.7).

This suggests that TOC can replace COD to estimate the degree of organic pollution in the said industrial wastewater for non-regulatory purposes such as designing treatment plants, monitoring pollution etc.