DOES TOC REPRESENT THE FUTURE OF WASTEWATER ANALYSIS?

Measuring the organic content of wastewater is an essential process for assessing contamination levels, environmental trends and water purification methods. To deliver the required insights, however, labs must be able to rely on efficient, consistent and high-quality analytical methods. In the past, the most frequently used methods were five-day biochemical oxygen demand (BOD5) or chemical oxygen demand (COD) tests, each of which have significant drawbacks. However, in recent years, total organic carbon (TOC) analysis has emerged as a safer and more environmentally friendly alternative. The proven advantages of TOC analysis mean this method is widely seen as the future of wastewater analysis - and Elementar's cutting-edge enviro TOC represents one of the most comprehensive solutions for this purpose.

The Proven Advantages of TOC Analysis

BOD5 and COD analyses have been accepted protocols for wastewater operations and environmental science for decades, but have clear limitations. BOD5 creates problems in terms of repeatability and inhibition by commonly occurring wastewater particles, and is more expensive than COD measurement, which is why the latter is used more often in wastewater monitoring, design, modelling and operational analysis. However, COD has disadvantages of its own, including the production of hazardous waste by-products such as mercury, hexavalent chromium, sulphuric acid, silver and other noxious chemicals, creating significant waste disposal costs.

This is why TOC has quickly emerged as a promising approach that can be used alongside COD and BOD5 in some cases, and functions as an alternative in others. It offers the following advantages:

- Provides accurate results within 3 to 10 minutes, compared to two hours for COD or five days for BOD
- Highly precise and reliable detection methods, especially when analysing complex materials found in industrial wastewater.
- Can run 24/7 and identify low levels of organic concentration measured in ppb, up to higher levels measured in ppm. Clean operations, with no dependence on hazardous chemicals

As the world moves towards more advanced and precise testing methods, TOC is taking centre stage. International bodies are now turning to TOC as an effective, efficient and clean alternative for regulatory monitoring, asset protection or process control applications.

Enviro TOC: The Best Option for TOC/TN Wastewater Analysis

Elementar's enviro TOC is designed to meet the growing demand for specialised TOC analysis solutions. The instrument is customised for assessing TOC and TNb (total bound nitrogen) in environmental and wastewater samples and is ideal for laboratories facing a wide sample matrix including solids, requiring precise results and high sample throughput.

enviro TOC incorporates several innovative technologies into a single instrument:

- Powerful furnace with temperatures of up to 1,200°C, ensuring full recovery and complete oxidation of highly stable carbon compounds
- Fully automated 60-position liquid sampler, allowing convenient high-throughput measurement of a wide variety of samples
- SALTTRAP matrix separation system, providing effective protection of the combustion tube and detector against corrosion when analysing concentrated salt solutions
- Precise TNb determination through electrochemical cell or integrated chemiluminescence detector technology
- Integrated rinsing functions to avoid carryover and contamination

This combination of cutting-edge features allows enviro TOC to deliver highly precise results and reliable performance over a long product lifespan, ensuring a low total cost of ownership and exceptional return on investment.

As environmental protection and water quality become ever more important, enviro TOC can help wastewater treatment facilities take steps in the right direction for a more sustainable and healthier future.

To find out more about the benefits that TOC analysis can deliver for environmental and wastewater analysis download Elementar's whitepaper 'Counting on Carbon - TOC vs. BOD & COD' using the QR code. Email: info-uk@elementar.com

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