Microtox® CTM

24/7 real-time monitoring

MODERN WATER

A Metir plc Trading Company

Microtox® CTM

Continous Toxicity Monitoring

Modern Water's Microtox® CTM is a site-based, broad range, 24/7 Continuous Toxicity Monitor (CTM). It **continuously measures the chemical toxicity of a water source**, giving instant indication of water health. Microtox® CTM is a fully automatic instrument that offers a 4-week, autonomous operating cycle and is simple to use for both operation and maintenance.

Microtox® CTM enables fully automatic, continuous, real-time water testing with **rapid detection of thousands of contaminants**. It provides early warning of pollution events, allowing swift action to prevent serious contamination.

Unlike other systems that test intermittently, Microtox® CTM takes two measurements per second, minimising false negatives and ensuring no events are missed.

- **Automatic diagnosis and reporting of system faults**
- **Remote data analysis and troubleshooting**
- **Detects thousands of chemical compounds with lower levels of detection than most other biosensor systems**
- **Real-time, 24/7 continuous monitoring**
- **4-week, autonomous operating cycle**
- **No manual intervention except for monthly maintenance**

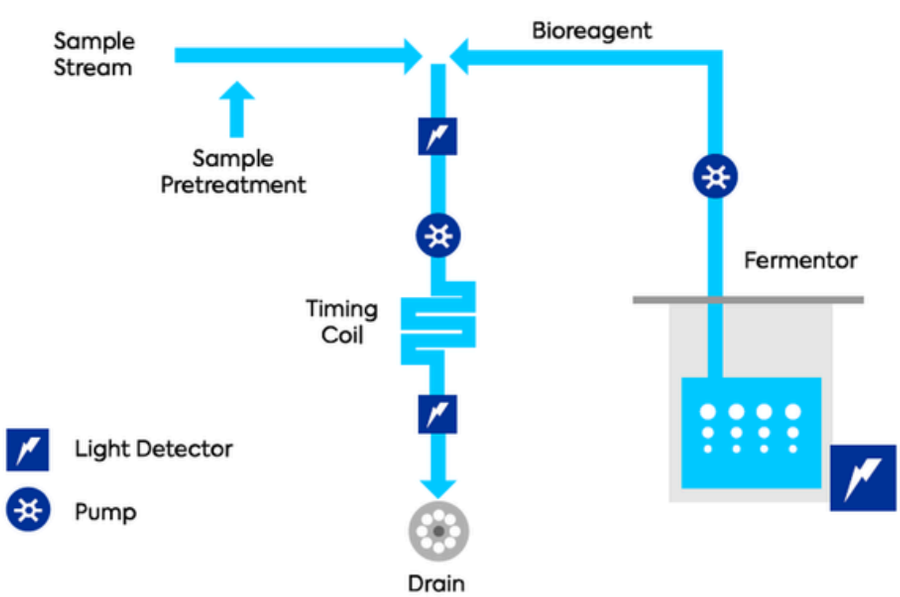
Process explained

Bioluminescent bacteria is used to detect toxins, healthy bacteria glow, but exposure to toxic substances dims their light. Measuring this change reveals water toxicity from single or multiple contaminants. Unlike traditional tests that are slow and labour-intensive, Microtox® CTM delivers continuous, fully automated monitoring, providing fast, reliable results with minimal operator input.

What it detects

Microtox® CTM automatically detects **metals, pesticides, herbicides, fungicides, solvents, and industrial chemicals**, even combined toxic effects, allowing rapid identification of harmful contaminants in water without costly, time-consuming tests.

Sample test flow diagram

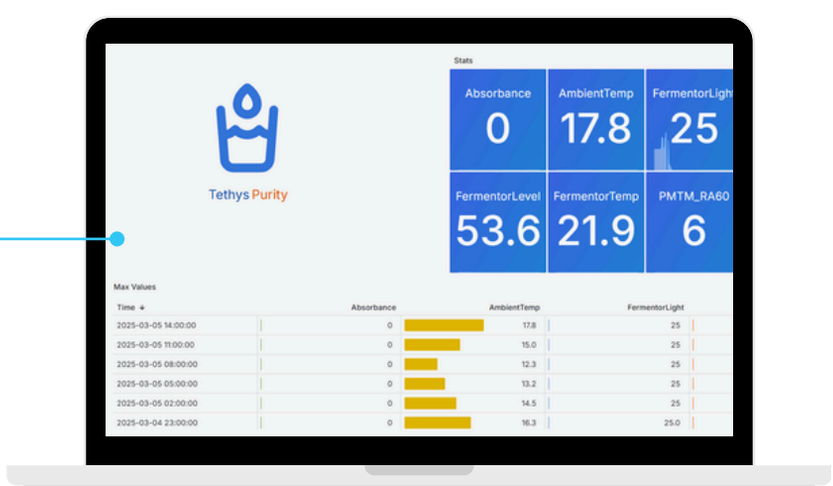


Specifications

Sample Requirement	150ml/h at ambient pressure
Sample Temperature	5-35 OC
Ambient Temperature	5-40 OC with A/C option
Power Supply	100 / 240V, 50-60Hz AC, 480W
Display	Colour, 180 mm diagonal, touch sensitive
Communications	Ethernet, USB port for data download
Communication Options	4-20mA, 2 relay alarm output, GPRS modem, WiFi network, LAN
Consumable	Supplied frozen, immediate use on site or storage at -22°C. Suitable for 4 weeks of operation.
Auto Calibration Interval	User settable between 3 and 24 hours
Standard	5mg / L zinc ion from zinc sulphate or customer specified
Waste Volume	120l/month - non-toxic, suitable for soak away.
Autosampler	Takes samples on positive alarm (optional)
Weight	70kg (approx.)
Dimensions: Main Enclosure	1250 x 750 x 365 mm (H x W x D)
Control Panel	425 x 750 x 365 mm (H x W x D)
Housing	Aluminium
Maintenance	2 hours per month
Mounting	Wall or floor
Optional	Pre-filteration, A/C option
Certification	CE, RoHS and WEEE

- Deliberate and accidental contamination events
- Water intake protection
- Portal water at point of use or in the distribution network
- Monitoring of rivers, lakes, reservoirs, seawater, groundwater, natural attenuation
- Effluent monitoring for discharge
- Recycled water

Example Data Dashboard



Microtox®

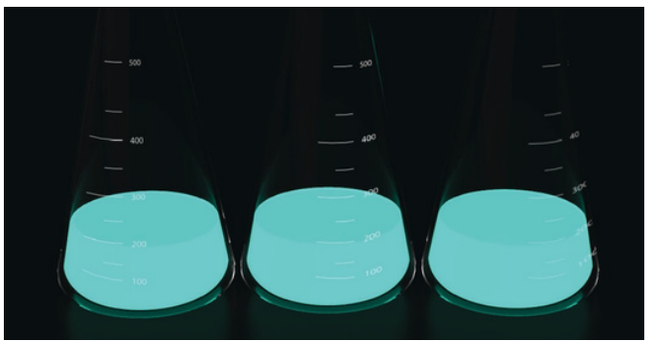
How Microtox® Technology Delivers Rapid, Highly Accurate Results

Biological monitoring is becoming increasingly important in assessing acute toxicity. For more than 30 years, biosensors using bioluminescent bacteria have been used for this purpose.

Modern Water developed Microtox® technology to overcome the limitations of conventional bioassay toxicity tests.

Thanks to its simplicity, speed, cost-effectiveness, and reliability, Microtox® has become one of the most widely recognised bioassays in the world today.

Unlike traditional tests that can take up to 96 hours and require manual counting, Microtox® **delivers results in under one hour**.



How It Works

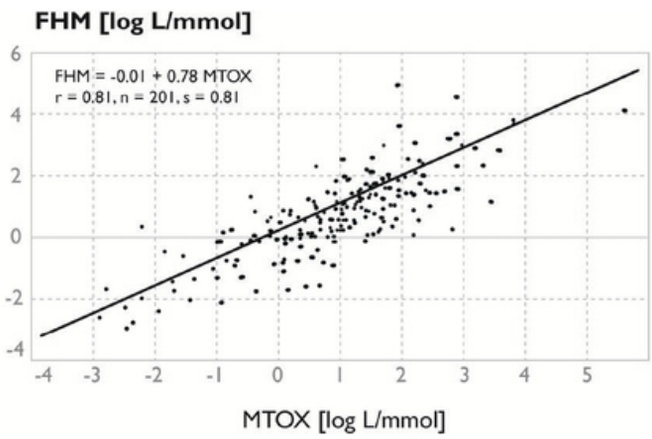
- The system uses a proprietary strain of bioluminescent bacteria (*Aliivibrio fischeri*).
- When the bacteria are exposed to a toxic substance, their light output changes — the greater the reduction in light, the higher the toxicity.
- The CTM instrument's luminometer measures these changes in light intensity, using a photometer designed specifically for Modern Water's bacteria.

Proven Accuracy

Independent, peer-reviewed studies show that Microtox® test results strongly correlate with conventional bioassay methods such as fish, daphnia, and shrimp tests.

As a result, wastewater treatment plants and other facilities use Microtox® acute toxicity tests to:

- Ensure compliance with effluent discharge permits
- Measure toxicity in influent streams
- Assess treatment efficiency in industrial and municipal plants
- Monitor water quality from raw influent to final effluent



Correlation of Microtox EC50 with Fathead Minnow LD50 (Kaiser) (r 2 = 0.81) Modern Water maintains an online library of over 700 published studies referencing Microtox technology in a wide variety of applications.

Applications

Drinking Water Plants

- monitor for accidental or deliberate contamination
- provides warning in sufficient time for action
- rapid screening and confirmatory results
- check source water
- check in process water
- check 'finished' water prior to distribution
- check water distribution system

Wastewater Plants

As part of the pre-treatment program, it allows the facility to:

- regulate the amount of pollutants coming into the facility
- maintain smooth operations
- minimize upsets
- maintain good compliance performance
- reduce and control costs and generate revenues by surcharging particularly toxic influent streams

Improve operating efficiency:

- avoid unscheduled shutdowns avoid damage/disruption to biological
- treatment systems
- avoid effluent violations
- avoid increasing chemical costs

Microtox® Has Been Used In A Broad Range of Applications In A Diverse Range of Industries;

- drilling fluids and drilling
- muds mining, wastewater, soil and water
- industrial effluents industrial process
- water marine water
- medical/pharmaceutical products
- food packaging materials
- personal care and household chemical analysis
- sediments
- storm water runoff
- solid phase materials
- food processing water

Microtox® LX

The new **Microtox® LX Series** is the next generation of laboratory-based acute toxicity analysing.

The new analyser blends Modern Water's proven M500 technology with improved features to simplify testing in demanding applications; drinking, industrial and wastewater.

Microtox® FX

The Microtox® FX instrument has a combined detection capability that provides a very sensitive and rapid test to detect two of the most probable classes of agents, pathogens and toxic chemicals that may accidentally or intentionally contaminate drinking water or wastewater. Microtox® FX's acute toxicity and ATP detection capabilities make it the ideal instrument for rapidly and accurately assessing if the quality of drinking water, from the source to the tap, has been affected by an incident.

Contact Information

For further information or to schedule your complimentary technical survey, please contact:

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