Microtox® FX

Rapid, portable water safety

MODERN WATER

A Metir plc Trading Company

Microtox® FX

Rapid, Portable Water Safety

Microtox® FX is a **fast, portable water quality testing system** that uses advanced **bioluminescence technology** to detect both acute toxicity and microbial contamination. Designed for use across water distribution and industrial wastewater systems, it provides rapid, accurate, and cost-effective results wherever you need them, from remote sites and reservoirs to ships and treatment plants. With proven reliability in major global deployments, including the Summer Olympics since 1984, Microtox® FX delivers trusted early warning of water quality issues, helping safeguard water from source to tap.

Microtox® FX delivers **fast**, **on-site detection** of **chemical toxicity** and **microbial contamination**, wherever you need it. Its **compact, portable design** and low sample requirements make testing **simple, efficient, and waste-free**.

With strong scientific correlation to recognised bioassays, it's **proven reliable** for drinking water, wastewater, and emergency response. Trusted worldwide, Microtox® FX helps safeguard water quality from source to tap.

- **Biological early warning system sensitive to thousands of simple and complex chemicals**
- **Fast, reliable results, available in 5 minutes after initial sample preparation**
- **Test results highly correlated with other widely accepted toxicity test methods**
- **Excellent correlation with HPC test methods**
- **Fully portable - lightweight with sturdy field carrying case**
- **Battery life of up to 8 - 10 hours with typical use**
- **Compatible with widely available ATP test kits***
- **Manufactured in a certified ISO quality system with 100% lot traceability**

*Check with your Modern Water representative to confirm compatibility with a specific test kit.

Process explained

Microtox® FX is a dual-function system for **toxicity testing and microbial contamination detection**. It combines bioluminescence technology and ATP measurement to provide fast, accurate water quality results.

The system uses ***Aliivibrio fischeri***, a naturally luminescent bacterium, to detect acute toxicity. Exposure to toxic substances disrupts the bacteria's metabolism, reducing their light output. The Microtox® FX photometer measures this change, giving a sensitive indication of toxicity.

For **microbial detection**, the system measures ATP, the energy molecule present in all living cells. **ATP** reacts with ***luciferin-luciferase***, the enzyme system found in fireflies, producing light. The instrument measures this light to determine microbial contamination quickly and accurately.

Applications

- **Drinking water monitoring**
- **Emergency response:**
  - **» Biological contamination**
  - **» Chemical toxicity**
- **Hazardous waste**
- **Industrial effluent**
- **Industrial process water**
- **Municipal effluent**
- **Recreational water**
- **Soil**
- **Sediments**
- **Storm water**

Specifications

Size	20cm x 18cm x 10cm (8" x 7" x 4")
Weight	1kg (2.2lbs)
Power	Self-contained Lithium battery or universal power adapter (15V dc @ 4amps)
Instrument Operational Temp	0°C - 40°C
Reagent Operational Temp	10°C - 28 °C
Dynamic Test Range	1 to 60 million counts (approx)
Display Output	Backlight LCD - 8 lines x 20 characters
Data I/O	Standard serial USB for data transfer and firmware updates
Data Storage	6.5k byte storage area (approx 600 reads)
Data Handling	Stand alone or download capability to PC; built-in software prompts operational steps, records light measurements and automatically calculates results for immediate review and further analysis
Test Reagent	Freeze-dried luminescent bacteria (Vibrio fischeri)
Toxicity Reagent Storage	Freeze-dried -15°C to - 25°C / Rehydrated 2 hours (ambient temperature)
ATP Reagent Storage	Refrigerate
Test Modes	Toxcity (Q-Toc and B-Tox) and ATP measurement
Test Durations	1-60 minute Exposure
Test Measurement Criteria	Light output by test reagent measured after timed exposure to sample
Results Display	Percentage light loss or gain for toxicity test; or light unit (photon) count (for ATP measurements)
Repeatability (Precision)	<20% coefficient or variation for B-Tox and Q-Tox mode testing
Sensitivity and Range	The analyser can detect photon counts from 0 to 60 million
Approvals	CE (European Community)

Microtox®

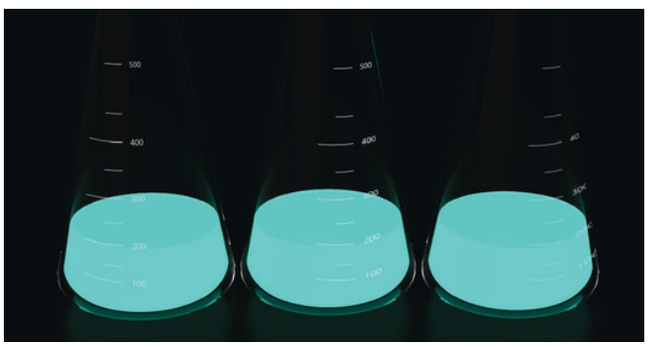
How Microtox® Technology Delivers Rapid, Highly Accurate Results

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

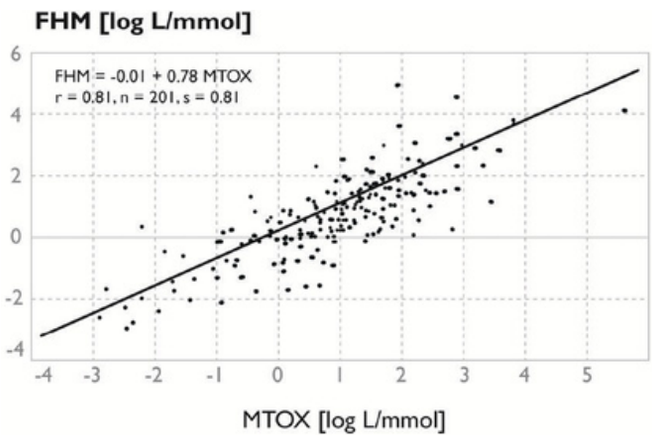
- The system uses a proprietary strain of bioluminescent bacteria (*Aliivibrio fischeri*).
- When the bacteria are exposed to a toxic substance, their light output changes — the greater the reduction in light, the higher the toxicity.
- The CTM instrument's luminometer measures these changes in light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

The Microtox® CTM makes fully automatic, continuous, on-line testing a reality.

It has broad range detection capabilities that provide rapid early warning of contamination by several thousand known chemicals. This enables containment measures to be actioned in time to protect against serious contamination events.

Contact Information

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

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