NEARLY

THREE DECADES OF EXCELLENCE

MICROBIOLOGICALLY INFLUENCED CORROSION

microbialinsights

An Industry Authority and Leader in Microbiologically Influenced Corrosion, Offering Innovative Molecular Microbiological Methods and the Comprehensive Actionable Data and Insight You Need to Make the Best Management Decisions

THE mi ADVANTAGE:

1 SUPERIOR CUSTOMER SERVICE

Over 200 clients report 100% client satisfaction*

**Microbial Insights Customer Satisfaction Survey*

2 UNPARALLELED ACCURACY & EXPERTISE

Highly skilled scientists who are accomplished & recognized in the field of molecular biology, offering the most accurate MMMs & expert interpretation.

3 A TRUSTED PARTNER

We have been a leading biotechnology laboratory for nearly three decades, serving Government, Industry, Academia, and the Military.

4 100% UNBIASED

We do not sell treatment solutions. We provide superior analyses, robust data, and expert interpretation, so you can make the best possible MIC mitigation decisions for your assets.

5 INNOVATIVE

We are continuously advancing the field of molecular microbiological methods for MIC threat assessment and mitigation with our active engagement in R&D and microbial database.

For nearly three decades, Microbial Insights has been a leader in the industry, offering cutting edge technologies for the testing and analysis of Microbiologically Influenced Corrosion (MIC).

Our molecular microbiological methods (MMMs) provide more comprehensive characterization of microbial communities and more accurate quantification of MIC-associated microorganisms, giving you the crucial information needed to make informed decisions on MIC threats and mitigation.

ISSUE: MIC, the deterioration of materials by microorganisms or their activities, impacts nearly all industries and is responsible for an estimated 40% of internal corrosion.

IMPACT: Loss of Production + Operations & Maintenance Cost + Destruction of Equipment.

THREATS: Health + Safety + Environmental Consequences.

PATH TO RESOLUTION: Our superior microbial testing methods and data interpretation provide you with the detailed insight you need to make informed management decisions that can impact the performance of your business. Our MMM's provide comprehensive identification and accurate quantification of MIC-associated microorganisms and our expert interpretation is 100% unbiased. Microbial Insights does not sell treatment solutions. We provide the MMMs and reporting that help you make the most informed decisions for your assets, based on the best possible data and analysis.

OUR SUPERIOR TOOLS:

mi CENSUS qPCR MOLECULAR BIOLOGICAL TOOL

CENSUS®qPCR rapidly detects and quantifies specific microbial groups and processes involved in microbiologically influenced corrosion.

mi QuantArray® MOLECULAR BIOLOGICAL TOOL

QuantArray® rapidly detects and quantifies a broad spectrum of key microbes and functional genes responsible for microbiologically influenced corrosion and oilfield souring in a single analysis.

mi NGS MOLECULAR BIOLOGICAL TOOL

Next Generation Sequencing is used to identify the microorganisms present in a sample, providing a profile of the microbial community.

See microbe.com to learn more about these additional MIC Tools

mi PLFA MOLECULAR BIOLOGICAL TOOL

mi PROTEOMICS MOLECULAR BIOLOGICAL TOOL

mi SRD MOLECULAR BIOLOGICAL TOOL

mi XRD MOLECULAR BIOLOGICAL TOOL

CENSUS qPCR

MOLECULAR BIOLOGICAL TOOL

CENSUS®qPCR (quantitative polymerase chain reaction) is a DNA based method to accurately quantify specific microorganisms or genes encoding specific biological processes associated with microbiologically influenced corrosion.

CENSUS® qPCR ADVANTAGES:

ACCURATE
Direct analysis of sample DNA removes the need to grow the bacteria, thus eliminating biases associated with traditional approaches (e.g., plate counts and MPNs).

QUANTITATIVE
Absolute quantification of concentrations of total bacteria, total archaea, and specific microbial groups to monitor abundances over time or in response to treatment. Results reported as cells/mL, cells/g, etc.

SENSITIVE
Practical Detection Limits (PDL) are as low as 100 cells per sample with a dynamic range over seven orders of magnitude.

SPECIFIC
Target specific bacterial groups (e.g., sulfate reducing bacteria, methanogens) associated with MIC.

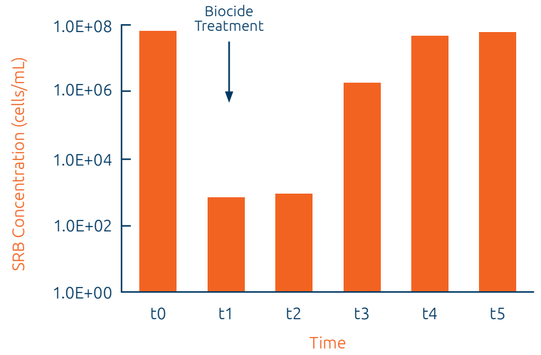
COST EFFECTIVE
Fast turnaround time (7-10 days), with rush service available, so you can make decisions and take action quickly.

FLEXIBLE
Analysis can be performed on almost any type of sample (water, solids, corrosion coupons, swabs, pitting debris, scrapings, and others).

CUSTOMIZABLE
Assays are available for quantification of many different MIC associated microbes and custom assays can also be developed to fit your needs.

CENSUS® qPCR allows facility managers to cost effectively quantify targeted members of the microbial community frequently implicated in MIC. For example, quantification of sulfate reducing bacteria (SRB) often responsible for pitting corrosion, could permit a manager to:

1. Assess the potential for MIC
2. Evaluate the effectiveness of biocide treatments
3. Optimize MIC mitigation efforts



CENSUS® qPCR provides quantification of specific organisms and biological processes responsible, or contributing to, microbiologically influenced corrosion (MIC).

To quantify a broad spectrum of these MIC associated microbial groups in a single analysis, please see QuantArray®.

QuantArray

MOLECULAR BIOLOGICAL TOOL

QuantArray® rapidly detects and quantifies a broad spectrum of key microbes and functional genes responsible for microbiologically influenced corrosion and oilfield souring in a single analysis.

QuantArray® ADVANTAGES:

ACCURATE
Direct analysis of sample DNA removes the need to grow the bacteria, thus eliminating biases associated with traditional approaches (e.g., plate counts and MPNs).

QUANTITATIVE
Absolute quantification of concentrations of total bacteria, total archaea, and specific microbial groups to monitor abundances over time or in response to treatment. Results reported as cells/mL, cells/g, etc.

SENSITIVE
Practical Detection Limits (PDL) are as low as 100 cells per sample with a dynamic range over seven orders of magnitude.

SPECIFIC
Target specific bacterial groups (e.g., sulfate reducing bacteria, methanogens) associated with MIC.

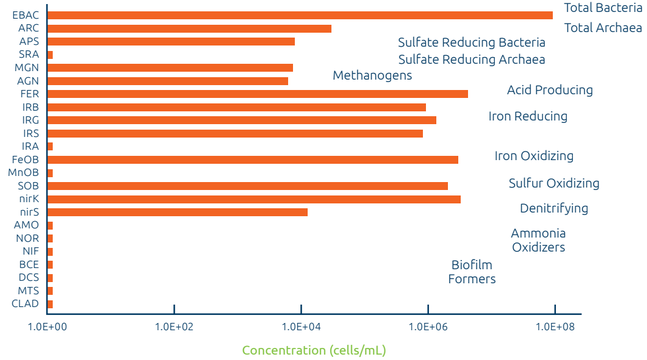
COST EFFECTIVE
In a single analysis, quantify total bacteria, total archaea, and a broad spectrum of common MIC microorganisms (e.g., SRB, SRA, methanogens, IRB, FeOB, etc.). Same accuracy and turnaround time as CENSUS qPCR but more comprehensive and even more cost-effective.

FLEXIBLE
Analysis can be performed on almost any type of sample (water, solids, corrosion coupons, swabs, pigging debris, scrapings, and others).

For comprehensive yet cost-effective MIC assessment, QuantArray® provides simultaneous quantification of many of the key organisms and functional genes most commonly involved in MIC, as well as oilfield souring.

Simultaneous quantification of a suite of common MIC microorganisms permits managers to:

1. Accurately assess MIC potential by sulfate reducing microorganisms, methanogens, iron oxidizing bacteria, and many others
2. Evaluate the effectiveness of biocides and other mitigation efforts



All of the organisms listed above are included in a single QuantArray® analysis.

MI NGS
MOLECULAR BIOLOGICAL TOOL

Next Generation Sequencing (NGS) analysis is a DNA based technique used to identify the microorganisms present in a sample, providing a profile of the microbial community. Comprehensive identification of the microorganisms present offers unprecedented insight into the potential microbial processes occurring in the environment.

NGS ADVANTAGES:

ACCURATE
Who is there? NGS provides comprehensive identification of the microorganisms present in a sample down to the genus and even the species level.

REVEALING
NGS reveals an overall profile of microbial community composition and the relative proportions of the classified microorganisms based on number of sequence reads. Identification of the microorganisms present in a sample provides insight into the microbial processes such as sulfate reduction that may be occurring in the system.

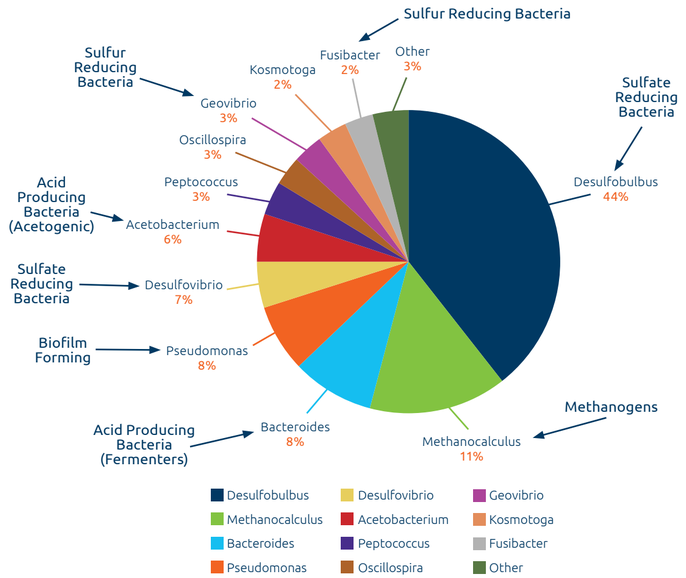
DESCRIPTIVE
NGS reports include brief descriptions of the top genera identified in each sample. The descriptions highlight the metabolic capabilities commonly associated with the genus.

COMPARATIVE
Reports include statistical analysis that visually compares NGS results between samples to reveal important differences or shifts in the microbial community by location, over time, or in response to treatment.

TIERABLE
In a tiered approach to MIC assessment, NGS is used to identify the microorganisms present in the sample and select CENSUS® qPCR assays for routine monitoring.

FLEXIBLE
Analysis can be performed on almost any type of sample (water, solids, corrosion coupons, swabs, pigging debris, scrapings, and others).

NGS is most appropriate for identifying members of the microbial community present in a sample when little is known about the process in question. Results provide insight into the potential microbial activities and can be used to select CENSUS® qPCR targets for routine MIC monitoring.



WE MAKE IT EASY

EASY STEPS TO ADDRESS MICROBIOLOGICALLY INDUCED CORROSION

1. Call us at 865.573.8188 or email at info@microbe.com
2. A friendly member of our team will advise you on the right tools for the job
3. Order and receive your supplies
4. Perform sampling according to our clear and easy protocols
5. Fill out the chain of custody form
6. Send to the nearest Microbial Insights location
7. Receive your unbiased report with actionable data and insight

For support with acquiring test samples please contact MI directly to be sent a sample kit, or to learn how you can obtain your own samples to send in for testing.

microbialinsights

microbe.com

865-573-8188

Microbial Insights, Inc. USA

Ship samples to:

ATTN: Sample Custodian

10515 Research Drive Knoxville, TN 37932 USA

865-573-8188