

Forum on Assessment of Microbiologically Influenced Corrosion (MIC) Threats and Failures: Approaches and Challenges

Co-chairs: Rick Eckert (DNV GL) and John Wolodko (U of Alberta)

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Drivers for this MIC Forum

- There is a continual need for oil & gas operations to **increase the longevity** of their assets, and to **reduce downtime** and **costly failures** as a result of material degradation and corrosion.
- Microbiologically Influenced Corrosion (MIC) has long been a challenge to the industry ... while the understanding of MIC and its mitigation has improved over the past few decades, it is still difficult to **predict** or **forensically identify**.
- Furthermore, there is little **consensus** and **guidance** available on this subject.



MIC Forum Objectives

- To provide insights on the latest approaches being used to assess MIC in the oil and gas sector.
- To hear current perspectives on MIC threat and failure analysis from end users, service providers and regulators.
- To gain insights from peers through guided discussions on the practical and scientific challenges associated with MIC.



Current Initiatives in MIC Research

- This Forum stems from an on-going joint industry project entitled “[Managing Microbial Corrosion in Canadian Offshore & Onshore Oil Production](#)”.
- \$7.85M Project funded by Genome Canada, Provinces of Alberta & Newfoundland, Mitacs and industry (in-kind).
- Collaboration between various research providers (academia and government research labs), government and industry.
- Co-led by [Lisa Gieg](#) (University of Calgary), [Faisal Khan](#) (Memorial University of Newfoundland), and [John Wolodko](#) (University of Alberta).



Project Activities

Activity 1 - Knowledge



- Field Sampling/Methods SOPs
- Database/Ontology Development
- MIC Offshore (abiotic and biological)
- MIC Onshore
- Biofilms/Biocide Resistance

Activity 3 - Modeling



- Molecular Modeling
- MIC Mechanistic & Predictive Models
- Risk Assessment Models

Activity 2 - Devices & Assays



- MIC Diagnostic Genes
- In-line Monitoring Tools
- Chemical & Bio Sensors
 - Molecularly Imprinted Polymers (MIPs)
 - Sulfide sensor/biosensor

Activity 4 - Translation



- Genomics in O&G – Assessing Barriers
- Recommended Guideline Development
- Dissemination and Industry Engagement



Participating Organizations

Research Partners



CanmetMATERIALS / CanmetMATÉRIAUX

Funding Agencies



GenomeCanada



Industry Partners



This Morning's Agenda

- 8:45 AM – Welcome & Introduction (John Wolodko)
- 8:55 AM – Current and Future MIC Assessment Guidelines (Rick Eckert)
- 9:05 AM – MIC Assessment: Operator viewpoint (Trevor Place)
- 9:15 AM – MIC Assessment: Regulator viewpoint (Jenny Been)
- 9:25 AM – MIC Assessment: Consultant viewpoint (Gary Jenneman)
- 9:35 AM – Panel Q & A Session
- 10:00 AM – Break
- 10:15 AM – Guided Discussion on MIC Assessment and Failure Analysis
(Moderators: Tom Jack, Rick Eckert & John Wolodko)
- 11:15 AM – Summary and Closing Thoughts
- 11:30 AM – Adjournment



Guided Discussion on MIC Assessment & Failure Analysis

- Who's here?
- What triggers your actions? Proactive vs. reactive?
- How do you do it? What actions do you take?

