



## Oilfield Services Update

### NCIMB strengthens microbial monitoring services

**NCIMB has strengthened its offering for monitoring microorganisms that influence corrosion. The company can now use a number of complementary techniques to analyse samples from oil and gas facilities.**

Microorganisms can influence corrosion with serious consequences, and therefore it is essential to test for their presence so early action can be taken to control them.

NCIMB's CEO, Dr Carol Phillips explains: "The method that has been most widely used in the oil and gas industry for quantifying potentially problematic microorganisms is a

culture-based approach, which involves inoculating selective growth media with samples from production facilities and pipelines. This important

A culture based approach has been widely used for quantifying problematic microbes in the oil and gas industry

microbiological technique has a number of advantages – it is a relatively low cost procedure, and there is a great deal of historical data that can be used to inform the interpretation of results.

"For many years, this was the only approach available to the industry. However, a number of molecular techniques are now available that allow us to gather a great deal of additional data about the microbial populations in oilfield samples. For example, not all microorganisms grow easily in laboratory conditions and those that don't grow aren't detected using culture-based methods.

The molecular biology technique qPCR quantifies targeted DNA molecules and can be used to rapidly determine the



qPCR gives very rapid results and can be applied to almost any type of oilfield sample.



Carol Phillips, CEO NCIMB

presence or absence of specific groups of microorganisms, detecting all cells present. This method gives very rapid results and can be applied to almost any type of oilfield sample.

"High throughput sequencing (sometimes referred to as metagenomics) is another approach, which has revolutionised our understanding of environmental microbiology. It uses sequencing information to analyse the whole microbial population from a single sample, and identify the groups of microorganisms present, giving a comprehensive picture of the microbial ecosystem within the oilfield.

At NCIMB we can advise on the most appropriate approach and have participated in R & D projects as well as undertaking routine analysis".





## Microbially influenced corrosion meets NORM at NCIMB

Cheryl Ross,  
Oilfield Services Manager,  
c.ross@ncimb.com

**NCIMB is licensed by the Scottish Environment Protection Agency to handle radioactive materials, ensuring clients don't lose valuable data as a result of the presence of naturally occurring radioactive material (NORM) in samples that require analysis.**

Corrosion coupons are used to assess general corrosion rates as well as microbial growth on the walls of pipes and vessels, which may lead to localised corrosion. However, where NORM scale occurs, this usually leads to coupons being discarded with the loss of valuable data, due to restrictions on the handling of radioactive materials.

NCIMB not only specialises in the identification and quantification of microorganisms that can influence corrosion, but also offers a full suite of

radiological analysis on scales, pig wax and produced water samples, reporting on the activity of radium and daughters, lead-210, actinium-228 and polonium. An added benefit of this is that we can handle NORM contaminated corrosion coupons for microbiological analysis.

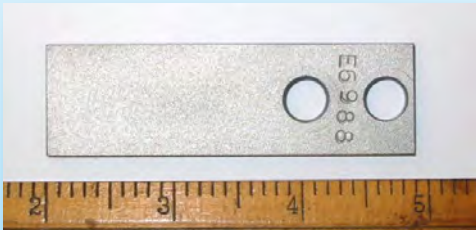
The availability of new techniques in molecular biology means that we can obtain more information from coupons than was possible in the past and this can be valuable in understanding microbial populations. However, the precipitation of NORM scale is a common phenomenon and operating companies may never get data from sample points that are constantly subject to NORM contamination, despite the fact that



NCIMB can report on the activity of radium and daughters, lead-210, actinium-228 and polonium

bacteria are just as likely to flourish in the presence of NORM scale as in any other location.

NCIMB can overcome this limitation. We accept NORM contaminated coupons for analysis and can undertake microbial analysis as well as reporting on the NORM contamination levels. Working together with our partners North East Corrosion Engineers (NECE), we can also process the coupons and calculate general corrosion and pitting rates.



Corrosion coupons are used to assess general corrosion rates and microbial growth

## NCIMB supports key oilfield microbiology events

NCIMB is delighted to have sponsored the 21st Reservoir Microbiology Forum, and the 5th International Symposium on Applied Microbiology and Molecular Biology in Oil Systems this year.

Both these events are excellent multi-disciplinary opportunities to bring academia and industry together to share knowledge and experience in the area of oilfield microbiology.

The programmes focus on the corrosion and souring issues that microbes can cause in oilfield systems, as well as microbial enhanced oil recovery and the microbiology of carbon dioxide capture and sequestration.



NCIMB Ltd

Ferguson Building, Craibstone Estate, Bucksburn, Aberdeen, AB21 9YA

Tel: +44 (0) 1224 711100

Email: enquiries@ncimb.com Web: www.ncimb.com

