

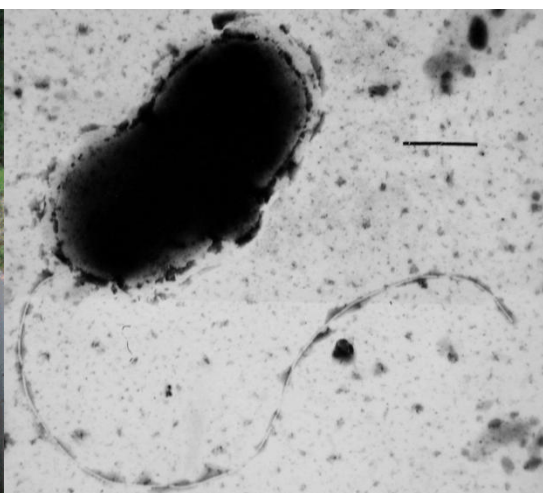
# Are microorganisms destroying our infrastructure?

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*Figure 1: The aftermath of microorganisms accelerating pipeline corrosion.*

[http://amazingbiotech.blogspot.com/2014\\_02\\_01\\_archive.html](http://amazingbiotech.blogspot.com/2014_02_01_archive.html)



*Figure 2: Sulfate Reducing Bacteria are good examples.*

<https://membership.corrosion.com.au/blog/>

## **Background:**

Microbially Induced Corrosion (MIC) is the deterioration of metals that is brought about by the metabolic activity of various microorganisms. The phenomenon is very detrimental to infrastructure and can accelerate the rates at which metals degrade, resulting in costly repairs to the affected areas. A major problem of MIC is the fact that it can be very difficult to monitor in some places, such as pipelines and sewer lines. While biocides may be used in order to kill the bacteria that have formed on the metals, the solutions are not always environmental friendly and can also be extremely exorbitant.

## **Current Research Projects:**

Presently, we are trying to find more effective ways to monitor the effects of MIC through the use of electrochemical techniques to monitor current flow, electron acceptance and

electron donation between metals and microorganisms. The goal is to preemptively catch problems in a pipe system before irreparable damage has been done.

Performing chemical analyses on water samples is also crucial, as it helps guide necessary modifications for techniques based on the findings.

### **Practiced Techniques:**

- DNA Extractions
- Ion Chromatography
- Inductively Coupled Plasma (ICP) Analysis
- Water Chemistry Analysis
- Iron and Sulfide Quantification Assays