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## Book Chapter: Corrosion, Microbial

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**Title** Corrosion, Microbial

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**Abstract** Microorganisms are involved in the corrosion of metals by their active involvement in electrochemical processes, for example, by utilization of hydrogen on metal surfaces. The anaerobic sulfate-reducing bacteria (SRBs) are especially important in the corrosion of a wide range of industrial structures because the sulfur cycle is linked to microbial metabolism, affecting the integrity of metals. Microbial influence corrosion (MIC) can also take place through bacterial exopolysaccharides, by acid production, and by hydrogen metabolism. Recent information indicates that both bacteria and electron shuttling molecules in the environment can also affect the electrochemical processes and therefore the corrosion of metals. Corrosion of metals is an electrochemical process where microorganisms can affect and accelerate the electron consumption from metal surfaces, resulting in dissolution of the metals as ions from matrices. New mechanisms of bacterial involvement have been proposed and tested, but more convincing scientific information is not available as this area of research is multidisciplinary and includes biology and also electrochemistry. Elucidation of the mechanisms also requires the characterization of the specific proteins involved and their function verification. Prevention of MIC mostly includes the use of various biocides and chemicals in industrial applications, and such an approach is problematic as chemicals not only cause environmental problems but also induce resistance in bacteria.

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biofilms which may in turn produce an environment at the biofilm/metal interface radically different from the bulk medium in terms of pH, dissolved oxygen, organic and inorganic species. Different stages of biofilm formation and growth. Since the biofilm tends to create non-uniform surface conditions, localized attack might start at some points on the surface. Microbial corrosion is a form of biodeterioration and is frequently referred to as biocorrosion or microbially influenced corrosion (MIC)<sup>1</sup>. This degradative process primarily acts on metals, metalloids, minerals, and other rock-based materials. Aside from bacteria, fungi, microalgae, and naturally occurring organic/inorganic chemicals contribute to biocorrosion.

Articles Figures Tables About. Corrosion microbial. Hill, E. C. in *Microbial Aspects of Corrosion*, Ed. Miller, J.D.A., Medical and Technical Publishing, Aylesbury (1971) [Pg.401]. A relatively high degree of corrosion arises from microbial reduction of sulfates in anaerobic soils [20].<sup>Â</sup> Microbial corrosion is therefore one special instance of the rapidly developing field of Microbial Ecology. [Pg.401]. The triggering mechanism for the corrosion process was localized depassivation of the weld-metal surface. Microbiologically influenced corrosion is also known as biological corrosion and microbial corrosion. Corrosion & Prevention Conference and Exhibition 2019 - November 24, 2019. Corrosionpedia explains Microbiologically Influenced Corrosion (MIC).