

Microbial corrosion, myth or reality?

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More and more evidence has been found that micro-organism can cause corrosion either by their metabolism or by creating an acidic micro-environment. Evidence of microbially induced corrosion (MIC) has even been found in the deep sea. When it develops, microbial corrosion, is a fast form of corrosion, unpredictable in its occurrence.

Harbours are experiencing increasingly more problems with microbial corrosion especially when steel berths are only protected by cathodic protection. Protective coatings can improve protection against corrosion but most paint systems have a limited life time expectation of maximum 15 years. Current ISO, NACE and NORSOK test methods are not capable of predicting the life cycle of a protective coating system and to take into account the protection against MIC. Only a few commercial available coatings give a long lasting general corrosion protection for over 25 years.

Because the life time of the applied coating is much shorter than the expected life time of the ships, regular inspection and maintenance of the protective coating becomes important. However, in most cases, coating maintenance and the choice of coating on itself is cost driven. Proper application is also an issue.

Several accidents involving ships have as root cause corrosion. For example, the sinking of the Nakhodka (1996), the Erica (1999), the Castor (2000) and the Swanland (2011) were caused by corrosion, possibly MIC. Amongst others, these incidents have resulted in the new IMO PSPC regulations with regard to ballast tank protection.

Research has shown that there is the possibility of occurrence of MIC in ballast water tanks but until now real time testing for MIC in ballast tanks in a very early stage is difficult.