Ph.D. lecture

Hydrogen sulfide induced concrete corrosion of sewer networks

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Friday 6th February 2009 kl. 13.00
room D. 205, Sohngaardsholmsvej 57
Aalborg University

In the lecture the research carried out regarding hydrogen sulfide induced concrete corrosion of sewer networks is presented. In sewer systems the toxic and odorous gas hydrogen sulfide often causes problems. In extensive sewer networks hydrogen sulfide concentrations above the lethal limit can easily develop and this constitutes a serious risk for workmen. If the gas escapes from the sewer to the surroundings, it is the cause of odor nuisances. Besides this, hydrogen sulfide causes corrosion in concrete sewers, because it is oxidized to sulfuric acid on the concrete surfaces. The concrete, being alkaline, is hereby deteriorated. This process can in serious cases cause the collapse of sewers after only a few years of operation. The objective of this research has been to improve the conceptual understanding of the processes involved in the hydrogen sulfide induced concrete corrosion of sewer networks. This should lead to improved possibilities for prediction of the problems caused by hydrogen sulfide in sewer networks. In the achievement of this objective, experiments have been conducted to determine the mechanisms and kinetics of the uptake of hydrogen sulfide on the concrete surfaces, as well as determine reaction pathways and kinetics of the hydrogen sulfide oxidation within the corroded concrete.

The research work in the Ph.D. thesis and the lecture share the same title.
An assessment committee participates in the discussion after the lecture. The members of the assessment committee are:

- *Associate professor Niels Iversen, Department of Biotechnology, Chemistry and Environmental Engineering, Aalborg University (chairman of the committee).*
- *Professor Erik Arvin, Department of Environmental Engineering, Technical University of Denmark.*
- *Professor José Saldana Matos, Departamento de Engenharia Civil e Arquitectura, Universidade Técnica de Lisboa*

On behalf of the Faculties of Engineering, Science and Medicine the lecture will be chaired by Professor Per Møldrup, Department of Biotechnology, Chemistry and Environmental Engineering, Aalborg University.