

**FLUORESCENCE MICROSCOPY FOR THE STUDY OF BIOREMEDIATION PROCESS  
UNDER ANAEROBIC CONDITIONS**

**VYUŽITÍ FLUORESCENČNÍ MIKROSKOPIE PRO STUDIUM BIOREMEDIATIONŮ  
PROCESŮ ZA ANAEROBNÍCH PODMÍNEK**

**Jiří Mikeš<sup>1)</sup>, Juraj Grígel<sup>1)</sup>, Jitka Dostálková<sup>1)</sup>, Kristina Turnvaldová<sup>1)</sup>, Vlastimil Pištěk<sup>1)</sup>,  
Elyes Lariani<sup>2)</sup>, Petr Beneš<sup>2)</sup>**

*1) EPS, s.r.o., V Pastouškách 205, 686 04 Kunovice, Czech Republic, e-mail: eps@epssro.cz*

*2) Institute of Chemical Technology Prague, Technická 5, 166 28 Praha 6, Czech Republic*

**Abstract:**

In this study, several cases of anaerobic transformation in terms of vitality, viability and proliferation of biological factors involved in these processes were observed. In the first case, denitrification and sulfate reduction of oil biodegradation provide a good experimental scope. We also investigated the viability of the strain *Yarrowia lipolytica* under anaerobic conditions as a representative agent able to be a fermentation agent in the elimination of non-polar substances. The improvement of development tools in this functional analysis of microbial dehalogenation fluorescence microscopy was deployed for additional confirmation of the viability of dehalogenation and fermentation groups of bacteria in real samples from CHC site. The culmination of this work is a view on manganese reducing bacteria (MRB) in the presence of chlorinated ethylene and the correlation of their vitality and biodegradation performance. Outcomes of this study show fluorescence microscopy and its analytical dimension in the service of bioremediation practice

**Key words:**

Fluorescence microscopy, anaerobia, live/dead cell diagnostics