

Ziembinska-Buczynska, A., Cema, G., Kalbarczyk, M., Zabczynski, S. Application of PCR-DGGE to Study Genotypic Variability of Bacteria Inhabiting Rotating Biological Contactors Treating Synthetic Coke Wastewater. *Ochrona Srodowiska* 2014, Vol. 36, No. 1, pp. 3–8.

Abstract: High ammonia nitrogen load of coke plant wastewater provided an opportunity to use the Anammox (ANaerobic AMmonium OXidation) process for its biological treatment. Biodiversity and variability of microorganisms in rotating biological contactor (RBC) biofilm treating synthetic coke wastewater was analyzed in the eight-month experiment with the main focus on the Anammox bacteria. Using PCR-DGGE (polymerase chain reaction – denaturing gradient gel electrophoresis) it was shown that the RBC biofilm was populated by Anammox bacteria. Possibly, an unknown environmental factor (probably nitrate(III) build-up) caused significant decrease in Anammox bacteria number, leading to a qualitative change in the total bacterial community structure at the same time. However, despite qualitative changes the bacterial biodiversity level remained relatively constant during the course of the experiment. On the basis of the obtained results it may be assumed that TAQ polymerases amplify part of DNA material from the RBC in a non-specific manner and this material is not separated properly in denaturing gradient. Use of other type of polymerase (*e.g.* proofreading) and/or change of DGGE gradient is presumed necessary as a solution to this problem.

Keywords: Anammox bacteria, 16S rRNA coding gene, genotypic monitoring, industrial wastewater.