Andrzejewski, P., Nieto Herrero, J., Ugena Garcia-Consuegra, L. Efficacy Assessment of Manganese Dioxide Assisted Catalytic Ozonation in the Example of 2-chloro-4-nitrophenyl (CNP). *Ochrona Srodowiska* 2013, Vol. 35, No. 4, pp. 57–60.

Abstract: Available literature provides inconclusive assessment of efficacy of metal oxide assisted (manganese dioxide including) ozonation process. Some study results negate catalytic role of metal oxides, while other research confirms it. Therefore, comparative studies assessing efficacy of manganese dioxide assisted catalytic ozonation and of a standard procedure were performed. 2-chloro-4-nitrophenyl (CNP) was chosen for the experiments. Both chlorine atom and nitro group in aromatic ring of the compound determine its high resistance to degradation. Buffered, CNP-containing (25 g/m^3) model solution was ozonated in the reactor for 20 min (samples withdrawn up to 60 min) at varied pH and with or without manganese dioxide in suspension. It was demonstrated that CNP was degraded (up to 40%), both in standard and catalytic ozonation, while the efficacy of the latter was insignificantly higher at pH=7 than pH=8. Additionally, CNP degradation was demonstrated to cease when ozone dosing stopped. No further time-dependent CNP depletion was observed.

Keywords: Ozone, catalytic ozonation, 2-chloro-4-nitrophenyl, CNP, manganese dioxide, MnO_2.