

Dabrowska, A., Binkiewicz, K., Nawrocki, J. Determination of Benzophenones in Surface Waters by GC-ECD Method. *Ochrona Srodowiska* 2009, Vol. 31, No. 3, pp. 57–60.

Abstract: So far, the use of gas chromatography and mass spectrometry has been an essential requisite for the analysis of benzophenones. The new method proposed in this paper consists in determining benzophenone-1 and benzophenone-3 by means of gas chromatography combined with electron capture detection (GC-ECD), upon direct derivatization of benzophenones in the sample with the PFBOA reagent, followed by extraction using an organic solvent. The method can be used to determine benzophenones in the aquatic environment, *e.g.* in surface water and wastewater, at concentrations of $10 \mu\text{g}/\text{m}^3$. The study has demonstrated that benzophenone concentrations in raw wastewater reach nearly $5 \text{ mg}/\text{m}^3$, and that biological treatment provides an approximately 100% efficiency of benzophenone removal. The presence of benzophenone-3 and benzophenone-1 was also detected in surface waters receiving wastewater discharges (Warta and Bogdanka rivers), where their concentration amounted up to $0.3 \text{ mg}/\text{m}^3$ and $1 \text{ mg}/\text{m}^3$, respectively. Considering the potential side effects associated with their uncontrolled presence in the aquatic environment, it is recommended that in surface waters benzophenones should be monitored routinely, and that the analytical methods which are in use should be subject to continuous development.

Keywords: Benzophenones, GC-ECD methods, wastewater treatment, surface waters.