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DETERMINATION OF AROMATIC VOLATILE COMPOUNDS IN PETROCHEMICAL WASTEWATER

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Abstract

A method based on headspace and capillary gas chromatography with flame ionization detector technique was validated for the simultaneous determination of five individual aromatic volatile pollutants: benzene, toluene, ethylbenzene, m/p-xylene and o-xylene. The validation took in consideration liniarity, accuracy, precision, limit of detection, limit of quantification and uncertainty estimation criteria and concluded that the proposed method is suitable to determine the pollutants of interest. The samples were taken from the effluent of petrochemical wastewater treatment plant before, during and after the tertiary biological treatment. The concentrations of the volatile aromatic pollutants in all analysed samples have been found below the internal quality procedure requirements (1 µg/L for benzene and 10 µg/L for its derivatives). It was noticed that the concentration decreases during the tertiary treatment. In the samples of the discharged effluent in the Black Sea the concentrations of all determined compounds were under the limit of detection.

Key words: BTEX, GC-FID, headspace, petrochemical effluents, uncertainty

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