

[ENV12]

Pollution pattern of volatile organic compounds (VOCs) in drinking water using chemometrics data analysis methods

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Drinking water samples were collected from water treatment plant outlet, service reservoir outlet and auxiliary outlet point along its distribution line during June 2003 to May 2004. All samples were analysed using solid phase micro-extraction (SPME) with a 100 μm polydimethylsiloxane fibre using gas chromatography with mass spectrometry detector (GC-MSD). The concentrations of 54 volatile organic compounds (VOCs) were determined. The results were compared with National Guideline for Drinking Water Quality 2000 and found that the overall measured mean concentrations did not exceed the values set. Principal component analysis (PCA) and parallel factor analysis (PARAFAC) methods are used along with graphical improvised such as scores and loadings plot, varimax rotation and biplot to investigate multivariate correlation, identify and interpret multicomponent contamination sources and deduce their environmental compartment distributions. By using the chemometrics data analysis methods, four major types of pollutions were identified, which are the paint industry, disinfection by-products, agricultural run-off (pesticides) and domestic effluent (dry cleaning agents) that are explained by about 85% of the total variance.