

Emerging Contaminants and Associated Treatment Technologies

Biljana Balabanova
Trajce Staflov *Editors*

Contaminant Levels and Ecological Effects

Understanding and Predicting with
Chemometric Methods

 Springer

Emerging Contaminants and Associated Treatment Technologies

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Chapter 7

Improving Quantitative Analysis of GC-MS for Tracking Potential Contaminants in Groundwater



**Biljana Kovacevik, Zoran Zdravkovski, Sasa Mitrev,
and Natalija Markova Ruzdik**

Abstract The behavior of nonvolatiles benalaxyl, buprofezin, chlorpyrifos, malathion, methomyl, metribuzin, pirimiphos methyl, pyrimethanil, triadimenol, penco-nazole, and pirimicarb is investigated when increased pressure injection of 10, 20, 30, 40, and 50 psi and vent time of 0.5 and 1.5 min are used during the injection time. The result showed that the peak area obtained during the increased pressure of 50 psi significantly differs from the peak area obtained when the classical hot split-less injection was performed. No significant difference was observed between the investigated vent times. The proposed method using 50 psi for vent time of 0.5 min was validated for benalaxyl, buprofezin, chlorpyrifos, pirimiphos methyl, pyrimethanil, pirimicarb, and triadimenol. The presence of these pesticides was investigated in the groundwater of the investigated area. Pyrimethanil was detected in 3 out of 20 investigated samples in a maximum concentration of 0.3392 $\mu\text{g/l}$. Chlorpyrifos was detected in only one sample in a concentration of 0.0367 $\mu\text{g/l}$. Correlation analysis was performed to find a possible relationship between the presence of pesticides and ions which predominantly results from human activities. Positive correlation with sulfates and potassium as well as low Na/Cl ratio suggests that pesticides are probably derived in groundwater leaching from the surface area.

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