Abstract

This bachelor thesis deals with the optimization of the determination method for pesticide chlortoluron by HPLC coupled with coulometric detection on the carbon felt electrode. As the stationary phase Purospher® RP-18 column (125 x 4 mm, 5 μm) (LiChroCART) was used. The mobile phase was phosphate-acetate buffer pH 4 and methanol 40:60 and the potential applied to the working electrode was 1400 mV.

The dependence of the signal on the concentration was monitored in the concentration range from $1 \cdot 10^{-4}$ to $7{,}5 \cdot 10^{-9}$ mol·dm^{-3}. Firstly, this dependence was observed in deionized water. Detection limits obtained by HPLC-UV and HPLC-ED were determined to be $4{,}42 \cdot 10^{-9}$ mol·dm^{-3} and $1{,}26 \cdot 10^{-7}$ mol·dm^{-3}, respectively.

Applicability of the method on the environmental samples was verified on model samples of river water and soil. The limits of detection of river water were determined by HPLC-UV method at $7{,}76 \cdot 10^{-9}$ mol·dm^{-3} and by HPLC-ED method at $1{,}71 \cdot 10^{-7}$ mol·dm^{-3}. For the soil, the limit of detection was measured by HPLC-UV at 0,198 μg·g^{-1}. and by method HPLC-ED it was determined as 0,135 μg·g^{-1}. Assays in model samples giving very similar results as in the pure solvents and this means that the matrix influence on the determination is low.