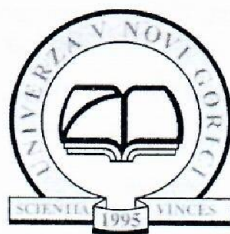


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ANALYTICAL CHEMISTRY

*Nova Gorica, June 27<sup>th</sup> – June 30<sup>st</sup>, 2012*

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## DETERMINATION OF CHLORPYRIFOS RESIDUES IN WATER

*Dragana Šunjka<sup>1</sup>, Sanja Lazić, Nada Grahovac<sup>2</sup>, Slavica Vuković<sup>1</sup> and Snežana Jakšić<sup>2</sup>*

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Chlorpyrifos (O,O-diethyl O-(3,4,5-trichloro-2-pyridyl) phosphorothioate) is the one of the most widely used insecticides in the world and it is detected more frequently in surface and groundwaters than any other organophosphorus insecticide. According to EU Directive 2008/105/EC (Annex X) chlorpyrifos is classified as one of the most important water pollutants. This study assessed the possibility of chlorpyrifos detection in samples of tap water and groundwater.

Extraction of chlorpyrifos was performed using ENVI C18 SP disc (47 mm). Prior to extraction disc was conditioned with 5 ml of acetonitrile/methanol (50/50, v/v) and 5 ml deionized water. Under vacuum 500 ml of tap water / groundwater with added chlorpyrifos standard solution in concentration 0.01-1.0 µg/ml, was filtered through the disc. Disc was dried at 25 °C for 1h. Chlorpyrifos was eluted with 6 ml (2x3 mL) of acetonitrile/methanol (50/50, v/v) mixture and evaporated to dryness. The extract was diluted in 2 ml of acetonitrile/methanol (50/50, v/v). Analysis was performed with a Hewlett-Packard (HP) model 5890 Series II gas chromatograph with EC Ni<sup>63</sup> detector.

Determination conditions were – t °C of column 190 °C with an increase of 30 °C/min up to 275 °C, t °C of injector 230 °C and t°C of detector 300 °C. The linearity of the method was evaluated by chromatographing chlorpyrifos solution in concentrations 0.001-1.0 µg/ml. Correlation coefficient (R<sup>2</sup>) was 0.995 % and limit of detection (LOD) and limit of quantification (LOQ) were 0.004 µg/ml and 0.01 µg/ml, respectively. The average recovery for tap water was 95.5 % and for groundwater 87.2 %.

**Keywords:** chlorpyrifos, determination, water

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