

## ABSTRACT

The aim of this diploma thesis was to verify the usability of the chemical generation of mercury cold vapor for speciation analysis of selected mercury compounds using high - performance liquid chromatography coupled within atomic absorption spectrometry in the determination of mercury in real tap water samples.

In this work, mercuric chloride, methylmercury, ethylmercury and phenylmercury were selected as model analytes.

In the first part, the working conditions of chemical generation of mercury cold vapor for each of the selected specie of mercury were optimized. Optimized equipment was used to measure the calibration dependence for each specie and the basic characteristics of the method were established.

After optimization of the chemical generation, HPLC column was connected prior this derivatization step and in resulted combined apparatus HPLC - CVG - QTAAS, the separation step was optimized . At optimized conditions, the calibration dependence was measured for each specie and the basic characteristics of the developed method including HPLC separation were established.

In conclusion, the proposed analytical method was tested on real flowing tap water samples. Because of low content of mercury species in these samples, the recovery of the method was established when comparing the signal of spiked real samples with calibration plot. Gained results were discussed.

### **Key words:**

Mercury, methylmercury, ethylmercury, phenylmercury, speciation analysis, atomic absorption spectrometry, high performance liquid chromatography, chemical mercury cold vapor generation,  $\text{NaBH}_4$