

Abstract

This diploma thesis develops methodology of arsenic speciation analysis by selective hydride generation with cryotrapping and atomic absorption spectrometry. Using this technique it is possible to determine toxicologically important forms of arsenic, i.e arsenites, arsenates and their mono-, di-, and trimethylated forms at concentration levels below $0,1 \text{ ng.ml}^{-1}$.

The first part of the thesis is focused on testing tubular membrane gas dryers with nafion membrane for drying gaseous phase containing generated hydrides. The suitability for arsenic speciation analysis was investigated and transport losses of individual arsenic species were found.

The second part describes mild digestion procedures suitable for arsenic speciation analysis in tissues. Two procedures were compared, acid digestion in phosphoric acid and more recent alkalic digestion by tetramethylammonium hydroxide. Digestion procedures were tested on certified reference material DOLT – 4 (Dogfish Liver) and chicken liver matrix.

Key words: Tubular nafion membrane dryers, Arsenic speciation analysis, Digestion, Phosphoric acid, Tetramethylammonium hydroxide, Chicken liver, CRM DOLT – 4, Hydride generation, Atomic absorption spectrometry