was realized by atomic absorption method with acetylene - air atomization on resonance lines (S-115 AAS spectrophotometer). Maximum results were obtained by soil sample decomposing using chloro-nitric acid (CNA) practically for all elements.

Soil decomposing ways envisioning the ultrasound usage and boiling with and chloro-nitric and hydrochloric acid of different concentration have been examined. US fluctuations in soil-solvent system were created by US dispergator UDZN-1 with 22 kHz frequency of different intensities (1.48-5.07 W/cm²) during 1-15 minutes. Microelements total contents dependence in solution on US treatment parameters (energy density \( E=It \), treatment time) and solvent strength. Different concentration chloro-nitric acid (CNA) solutions (CNAconc, CNA(1:1), CNA (1:5), CNA (1:10) as solvents were used. Experiment result analysis had been shown that (with using of different concentration CNA for microelement’s transition to solution by ultrasound action) metals extraction completeness (to solution) dependences on solvent strength observe.

Therefore for a different soil probes the decomposition schemes consideration including US action and boiling with acids treatment was carried out with account of experimental accepted optimum US parameters. The soil sample weight was perfused by 10 ml of CNA, and was treated by US during 5 min., then solution (was) filtrated into graduate flask. The rest of soil was treated by 10 ml of CNA and was boiled to wetting soils extraction then it was added 10 ml of 1,0 M HCl (solution), it was brought up to boiling and filtrated heat solution into graduate flask. For the soil decomposition by other schemes single US treatment was changed by two or three fold action with fresh CNA portions addition after filtration of solutions treated. It was the same actions in the case of following boiling of soil rest with HF.

Thus usage of specific decomposition schemes is possible during single elements content determination and optimum extraction schemes for elements content elucidation is possible to consider the three fold US treatment and the following twiced boiling in HF.

APPLICATIONS OF ATOMIC ABSORPTION SPECTROMETRY IN OCCUPATIONAL HEALTH

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Key words: Atomic absorption spectrometer, occupational health, biological samples, lead, manganese, selenium

Increasing amount of society needs for new chemicals production and the use of old technologies which are developed without any care for environmental pollution has give rice to important problems in the environment and occupational health. Related with this subject special standards were performed for the control of the occupational health point of view(1). Special analytical methods were also included for the analysis of metals which uses atomic absorption spectrometry (AAS). First application of AAS was seen in 1960's for metal analysis in serum samples (2). The interested toxic elements were given as lead, mercury, cadmium and arsenic and the others. The analysis of trace elements in biological samples by AAS shows different analytical procedures.

In our work, some of developed methods for the determination of lead, manganese (3) and selenium in biological samples were outlined. Calibration methods and spectral, chemical and physical interference which were seen in flame and electro thermal AAS were given. Beside this activated carbon method was discussed for the elimination of Interfering constituents.

1- HSE, EH40-93 Occupacional Exposure Limits, Regulations 1988, UK.
FURNACE-FLAME ATOMIZER AND EXPERIENCE OF ITS UTILIZATION ON THE ATOMIC ABSORPTION ANALYSIS SOME OF ENVIRONMENTAL AND INDUSTRIAL MATERIALS

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Key words: AAS, furnace-flame atomizer, heavy metals, environmental, non-ferrous metals, alloys

Furnace-flame atomizer has some of advantages comparison with commercial type of graphite furnace HGA or CRA at the atomic absorption spectrometry (AAS) determination highly- and medium-volatility elements. Nevertheless in analytical practice till now its have not received widespread application.

This work are devote to research of capabilities and limitations the open type electrothermal atomizer which are combined with high temperature flame (C₂H₂-air or C₂H₂-N₂O) at the atomic absorption determination Pb, Cd, Zn, Cu, Sn, Ag, Mn, Cr in some of environmental (nature waters, soils, sediments, plants) as well as industrial materials: non-ferous metals, its alloys, food products.

There was investigated the contribution some parameters of furnace-flame atomizer, interference effect of the main components of researched materials on value of atomic absorption high listed elements.

At the AAS analysis some of multi components objects the separation and preconcentration procedure are need.

It was shown that satisfactory sensitivity, relative simplicity and ability of direct AAS determination allows by simple means effectively to solve different analytical chemistry problems.

The methods propose are used at the AAS determination >0,001 mg/l Cu, Pb, Cd and Zn in marine, river and drinking waters; 0,5-2,5 ppm Pb in sun-flower and olive oils; 2,0-50 ppm Cr, Pb, Cu in soils and sediments; 1 10⁻⁴ – 2 10⁻² mass. % Ag, Pb, Cd, Zn – in Cu-, Ni-, Zn-and Al-based alloys. Accuracy of the analysis results was checked according of mathematical statistics rules. Relative standard deviation (S_r) in any cases does not exceed 0,17.