RA-915 series

Zeeman AA spectrometer

Total mercury determination in water by CVAAS

RA-915M + RP-92

INTRODUCTION

Mercury determination in surface, drinking and waste waters is one of the most popular analyses used for environment pollution and sanitary control.

MEASUREMENT METHOD

Samples of surface, drinking and waste waters must be pre-treated using the appropriate standard digestion procedures (for instance, by potassium permanganate or bromide-bromate mixture).

The method is based on the reduction of Hg(II) to the atomic state using a tin(II) chloride solution and the follow-up transporting of mercury atoms into the analytical cell of the analyzer by air flow (the "Cold Vapor" technique). The mercury concentration is then measured by the Mercury Analyzer RA-915M combined with RP-92 or URP attachment. Mercury mass concentration is calculated by the analytical signal integration and pre-established calibration (area of the peak vs mercury mass).

Sample volume for injection is from 1 to 20 mL. Detection limit (DL) is 0.0005 ng of mercury, which corresponds to the mercury mass concentration of 0.000025 µg/L (0.025 ng/L). The measurement range is 0 to 5 µg/L for the multi-path cell and can be extended up to 2000 µg/L using the short single-path cell.

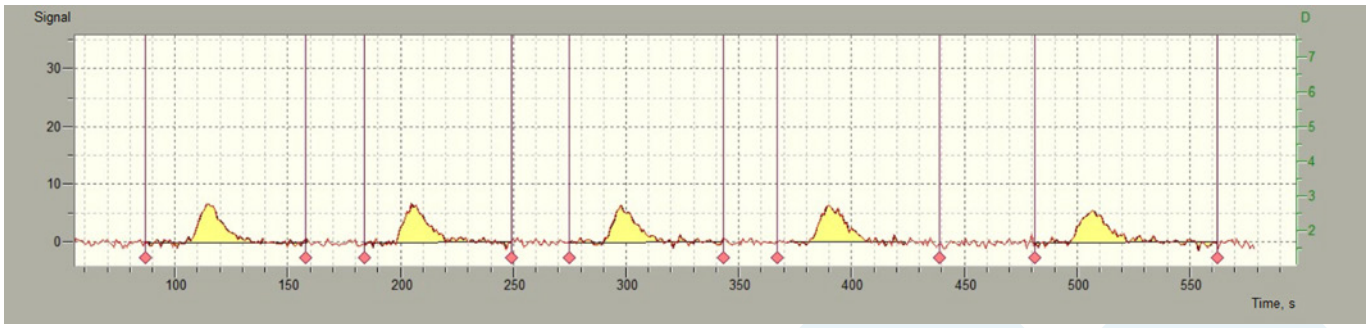

Fig. 1. *Peaks corresponding to the injection of 0.005 ng of Hg.*

EQUIPMENT AND REAGENTS

The following equipment and materials are used for analysis:

- Mercury analyzer RA-915M with RP-92 or URP attachment;
- PC with Windows® XP/7/8/10 and RAPID software;
- Lumex Instruments kit, **Order No 0300003071**.

COMPATIBLE METHODS LIST

- EPA Method 245.1
- ISO 12846:2012
- ASTM D3223-17
- AOAC Official Method 977.22

Directives & standards for drinking water	Limits, µg/L
WHO Guidelines for drinking water quality (2011)	6
Drinking Water Directive 98/83/EC	1
US EPA National Secondary Drinking Water Regulations	2
TR EAEU 044/2017 Technical Regulation on Packaged Water	0.2 / 0.5 / 1
GB 5749-2006 Standards for drinking water quality	1

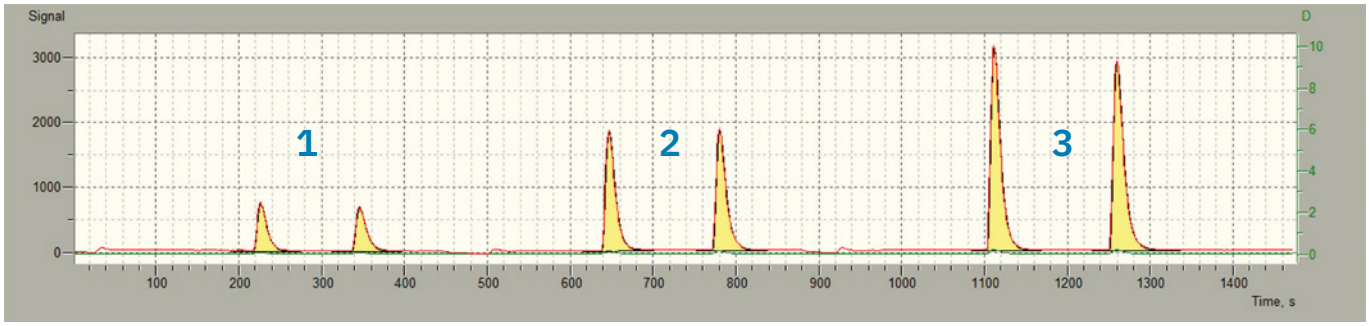

Fig. 2. *Examples of analyses of the surface and waste water using EPA Method 245.1.*

	Water samples	Measured value, µg/l
1	OK L4-14	0.51±0.10
2	OK 13-10	1.9±0.5
3	OK C3-13	5.2±0.7

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