

Accepted Manuscript

Title: Determination of toxic trace elements in canned vegetables. The importance of sample preparation

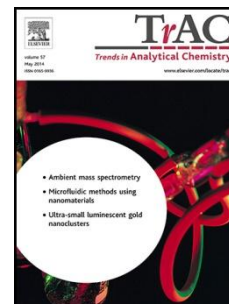
Author: Yiannis Fiamegos, Mitja Vahcic, Håkan Emteborg, James Snell, Georg Raber, Fernando Cordeiro, Piotr Robouch, Beatriz de la Calle

PII: S0165-9936(15)30222-3

DOI: <http://dx.doi.org/doi: 10.1016/j.trac.2016.02.004>

Reference: TRAC 14659

To appear in: *Trends in Analytical Chemistry*



Please cite this article as: Yiannis Fiamegos, Mitja Vahcic, Håkan Emteborg, James Snell, Georg Raber, Fernando Cordeiro, Piotr Robouch, Beatriz de la Calle, Determination of toxic trace elements in canned vegetables. The importance of sample preparation, *Trends in Analytical Chemistry* (2016), <http://dx.doi.org/doi: 10.1016/j.trac.2016.02.004>.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Determination of **toxic trace elements** in canned vegetables. The importance of sample preparation.

Yiannis Fiamegos¹, Mitja Vahcic¹, Håkan Emteborg¹, James Snell¹, Georg Raber²,
Fernando Cordeiro¹, Piotr Robouch¹, Beatriz de la Calle^{1*}

¹ European Commission, Joint Research Centre, Institute for Reference Materials and
Measurements, Retieseweg 111, 2440 Geel, Belgium.

² Institute of Chemistry – Analytical Chemistry, University of Graz, Universitaetsplatz 1, 8010 Graz,
Austria

Highlights

This manuscript presents:

- The organisational challenges of a proficiency test using a test item that resembles routinely measured test items as close as possible.
- The impact of the different sample preparation approaches followed by the participants of the proficiency test, to their performance, to the policy makers and to the conformity assessment of the test item.
- The importance of the correct estimation of measurement uncertainties

Abstract

This manuscript presents the outcome of a proficiency test, named IMEP-118, for the determination of total As, Cd, Pb, Hg, Sn and inorganic As mass fractions in canned vegetables (peas in brine). With this exercise a new approach was followed by the organizers, aimed at the production of a test item identical to those screened in official controls. A total of 127 participants from 36 countries registered to the exercise out of which 123 reported results back.

Laboratory results were rated using z- and ζ -scores in accordance with ISO 13528:2005. Due to lack of specific sample preparation protocol for such commodities, the participants used two different approaches. From the analytical point of view the majority of laboratories (more than 74 %) performed satisfactorily. However, several participants (32) characterised the test item as compliant with the respective EU legislation, although it was not.

Download English Version:

<https://daneshyari.com/en/article/5141787>

Download Persian Version:

<https://daneshyari.com/article/5141787>

[Daneshyari.com](https://daneshyari.com)