

Chemical Contaminants and Residues in Food Community

Metals Subgroup Report

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METALS ANALYTICAL NEEDS

During the initial meeting of the Metals Subgroup in the Fall of 2007 [link: [Metals Subgroup Meeting Documents 2007-10-31r.pdf](#)] 6 interested individuals participated. Since then, others have joined the subgroup and the membership is now about 30 (28 with an email address). At the initial meeting, the needs listed in Table 1 discussed. The other members of the subgroup are being solicited for their input to the method needs [link: [Email 2008-05-26 from Chair, Metals Subgroup](#)]. After their input, the subgroup process (upper right on [Metals Subgroup's main web page](#)) will be continued. For generating discussion, listed in Table 2 are other potential needs.

Table 1. Metals Subgroup Method Needs (Preliminary)

Analyte	Purpose
Arsenic speciation	Determine the level of the toxic chemical forms of arsenic (arsenite, arsenate, monomethylarsonate and dimethylarsinate) in food (primarily seafood, dietary supplements)
Unification of methods (AAS/ICP)	Integration of flame atomic absorption spectrometry, inductively coupled plasma atomic emission spectrometry and inductively coupled plasma mass spectrometry analytical procedures to provide comprehensive, multielement analytical methods for foods.
Iodine	Determine the level of iodine in food.
Methylmercury	Determine the level of methylmercury in food, primarily seafood.
Selenium speciation	Determine the level and chemical forms of selenium in food and dietary supplements.
Cadmium speciation	Determine the level and chemical forms of cadmium in food.
Total mercury	Determine the level of mercury in food.

The primary goal of the subgroup is to establish a multilaboratory validated analytical method that fulfills the needs of its members. However, before performing a multilaboratory validation, a method must first be properly developed and its performance characteristics determined. The subgroup will be asked to establish the necessary performance characteristics for metals analytical methods and contribute potential methods to address the subgroup method needs. The subgroup will also be asked to participate on performing single laboratory validation of methods and establish protocols for these validations. In addition, the subgroup will bring together persons of similar interest to discuss analytical issues related to metals analysis ranging from

obtaining a homogeneous analytical sample through preparation of an analytical solution to determining metal (element) concentration.

For those community members visiting this page who are not members of the Metals Sub-Group but wish to give us your method needs, then download and fill out the Metals Subgroup Method Needs form [[link: Metals Subgroup Method Needs 2008-05-26.doc](#)] and email it to the Sub-Group chair.

Table 2. Potential Method Needs

Analytes	Matrices/Technique
Lead	Hard Candy/GF-AAS
Arsenic, Cadmium, Lead, Mercury	All Foods/Microwave Digestion/ICP-MS
Calcium, Chromium, Copper, Iron, Magnesium, Manganese, Phosphorus, Potassium, Selenium, Sodium, and Zinc	All Foods/Microwave Digestion/ICP-MS or ICP-AES
Aluminum, Antimony, Nickel, Tin	All Foods/Microwave Digestion/ICP-MS
Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Selenium, Thallium, Uranium	Beverages, Bottled Water/ICP-MS
Methylmercury	Seafood/HPLC ICP-MS
Mercury	Seafood/Microwave Digestion/CV-AAS
Arsenic, Cadmium, Lead, Mercury	Dietary Supplements/Microwave Digestion/ICP-MS
Calcium, Chromium, Copper, Iron, Magnesium, Manganese, Phosphorus, Potassium, Selenium, Sodium, and Zinc	Infant Formula/Microwave Digestion/ICP-MS or ICP-AES
Cadmium, Lead	Ceramic Foodware/ICP-AES
Arsenic, Cadmium, Lead, Mercury	All Foods/XRFS [Screening]

MEETINGS WITH EMPHASIS ON ELEMENTAL ANALYSIS OF FOOD

1. The Chemical Contaminants and Residues in Food Community will be gathering at the 2008 AOAC INTERNATIONAL meeting this September in Dallas, Texas USA (http://www.aoac.org/meetings1/122nd_annual_mtg/main.htm). The Community meeting will be on Monday, September 22, 2008. First, there will be a symposium from 1:30-3:00 pm titled CONTAMINANT COMMUNITY: PROGRESS UPDATE AND VISIONS BY COMMUNITY AND SUB-COMMUNITY CHAIRS. After this symposium from 3:15-5:15 pm, the Community and its subgroups will meet.
2. 3rd International IUPAC Symposium on Trace Elements in Food, Rome, Italy, 1-3 April 2009. (<http://www.tef3-2009.it/welcome.html>)