**National Institute of Standards and Technology**
Food Nutrition & Safety Measurements Quality Assurance Program
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Dear Colleagues,

Thank you for your interest and/or past participation in NIST Quality Assurance Programs (QAPs). A call for participants in Exercise 2 of the Food Nutrition and Safety Measurements Quality Assurance Program (FNSQAP) is now open. FNSQAP is designed to assist laboratories in the development and validation of new analytical methods, in improving the quality of their analytical measurements, and in supporting compliance with a number of federal regulations enforced by the US FDA, USDA, and other international bodies. Exercise 2 of FNSQAP will offer opportunities for participants to measure mass fractions of nutritional and toxic elements, water- and fat-soluble vitamins, fatty acids, and contaminants in food matrices, including infant formula and related materials distributed by NIST. Laboratories may elect to participate in some or all studies (e.g., only nutritional elements and water-soluble vitamins) or report only selected analytes (e.g., chromium, but not molybdenum and selenium), as applicable to the work done in their laboratories.

Participation in FNSQAP is free of charge, although participants will be required to pay for the cost of sample shipment by providing NIST with a shipping account number using UPS, FedEx (including TNT), or DHL. International participants must provide an import shipping account number, if applicable. Participants are responsible for all incurred shipping charges, including those that may result from shipments being returned to NIST because of customs clearance issues. In no cases are participants paid to participate in FNSQAP.

Instructions for sign up for new and existing NIST QAP participants are attached. **Registration will open on January 24, 2022 and will close on March 4, 2022. Samples will be distributed in late March/early April 2022.**

We hope that within this exercise you will find studies that are of interest and use to your laboratory. Future FNSQAP studies may address additional food safety areas such as authenticity, protein food allergens, and microbial contaminants, as needs are identified. If you have any suggestions for studies or would like more information regarding FNSQAP and other NIST QAPs, please send your request to QAPHUB@nist.gov or visit https://qa.nist.gov.

Please let us know if you have questions. We look forward to your participation in this and future FNSQAP exercises.

Best regards,
FNSQAP Team

**Food Nutrition & Safety Measurements Quality Assurance Program (FNSQAP)**
Exercise 2 – Spring 2022

**Nutritional Elements**
Chromium, molybdenum, and selenium are essential minerals that are required for the human body to function properly. To reduce the burden of chronic diseases caused by a deficiency or excess intake, accurate assessments of these elements in foods such as infant formula is necessary to better understand the connections between dietary intake, nutritional status, and health outcomes at both the individual and population levels.

| Analytes | Samples |
|---|---|
| Cr, Mo, Se | Infant Formula |

**Toxic Elements**
Potential uptake of toxic elements from the growing environment or processing may lead to contamination of plant-based foods and consumption of these contaminated foods can cause illness, impairment, or, at high doses, death. There are finding of the presence of toxic metals in cacao and chocolate products. Accurate testing of these environmental toxins in ingredients and foods can help ensure product safety and customer confidence in the food supply.

| Analytes | Samples |
|---|---|
| Cd, Pb | Powdered Cacao, Chocolate Drink Mix |

**Water-Soluble Vitamins**
Choline is an essential nutrient that plays a role in liver function, normal brain development, muscle movement, nerve function, metabolism, and sleep. Carnitine, a group of compounds derived from amino acids, plays a role in energy production, and found in the skeletal and cardiac muscles which utilize fats for fuel. These essential nutrients provided to infants via infant formula for proper development. Accurately understanding the intake of choline and carnitine through measurement in fortified foods can inform future decisions about recommended dietary intakes.

| Analytes | Samples |
|---|---|
| Choline, Carnitine | Infant Formula |

**Fat-Soluble Vitamins**
Carotenoids are a group of compounds essential for eye health. They have also been associated with antioxidant activity and with reduced risk of several different types of diseases, such as various types of cancer and cardiovascular disease. Some carotenoids, such a β-Carotene are considered provitamin A and will convert to retinol in the body. Accurately understanding the intake of carotenoids through measurement in fortified foods can inform future decisions about recommended dietary intakes.

| Analytes | Samples |
|---|---|
| β-Carotene, Lutein, Lycopene | Infant Formula |

**Fatty Acids**

Docosahexaenoic acid (DHA) and arachidonic acid (ARA) are fatty acids found in breast milk and play important roles in early infant development. When DHA is added to infant formulas, corresponding amounts of ARA are required by regulation. Accurate methods are needed for the detection of DHA and ARA to meet these regulatory criteria, to understand the intake of DHA and ARA through fortified foods, and to inform future decisions about recommended dietary intakes.

| Analytes | Samples |
|---|---|
| DHA, ARA | Infant Formula |

**Contaminants I**

Glyphosate is a broad-spectrum herbicide and the most widely applied herbicide in the US. Worldwide experts have not reached a consensus on the human toxicity of glyphosate and monitoring of human exposure is a critical component of understanding population health impacts. For this monitoring to be effective, accurate methods are needed for the detection of glyphosate in agricultural products.

| Analytes | Samples |
|---|---|
| Glyphosate, AMPA,<br>n-Acetyl-glyphosate, N-Acetyl-AMPA | Turmeric, Cat Food |

**Contaminants II**

Phthalates are a family of man-made chemicals used in a variety of industrial applications that are considered endocrine disruptors and have been linked to adverse health effects. Food packaging and other food contact materials can lead to substantial phthalate concentrations in foods and increase global phthalate exposure through dietary intake. Accurate methods are needed for the detection of phthalates in food products in order to assess exposure routes and health impacts associated with specific phthalate compounds.

| Analytes | Samples |
|---|---|
| Phthalates | Infant Formula, Powdered Cheese |

## Registration Instructions

***For New NIST QAP Participants***

To participate, first request an account by navigating to https://qa-hub.nist.gov and clicking *Request new account*. Your account request will be approved by a program administrator, after which you will receive an automated confirmation email with login information. Please modify the temporary password immediately upon logging in to the system and confirm or update your contact information on the *My account* page. *All participants are required to provide shipping account information (e.g., FedEx/TNT, UPS, DHL), to which the cost of sample shipment will be charged. Your account will not be approved until a valid shipping account is provided.* Next, log in to your account at https://qa-hub.nist.gov. Click *Enroll to upcoming exercises* on the top menu or scroll to the bottom section under *Upcoming exercises* and click the blue button for *Apply for exercises.* and select the studies of interest to your laboratory, then click the blue button for *Save and confirm*. Your participation request will be approved by a program administrator, and you will receive an automated confirmation email. Study selections can be modified at any time up until the close of the registration period.

***For Existing NIST QAP Participants (DSQAP, HAMQAP, and/or CannaQAP)***

Navigate to https://qa-hub.nist.gov and click *Reset your password*. Enter the email address associated with your registration on a previous QAP site, and click the blue *Submit* button. You will then receive an automated email with instructions to reset your password. Please confirm or update your contact information on the *My account* page (access via the black menu bar) using the red *My laboratory settings* tab at the top. To participate, click *Enroll to upcoming exercises* on the top menu or scroll to the bottom section under *Upcoming exercises* and click the blue button for *Apply for exercises.* and select the studies of interest to your laboratory, then click the blue button for *Save and confirm*. Your participation request will be approved by a program administrator, and you will receive an automated confirmation email. Study selections can be modified at any time up until the close of the registration period. *All participants are required to provide shipping account information (e.g., FedEx/TNT, UPS, DHL), to which the cost of sample shipment will be charged. Your participation request will not be approved until a valid shipping account is provided.*