



In Food & Agriculture, We Set the Standard

An Integrated Standards and Official Methods Development Project for Per- and Polyfluoroalkyl Substances (PFAS) in Foods



AN AOAC INITIATIVE FOR 2022

AOAC INTERNATIONAL is proposing the establishment of an integrated project to provide analytical solutions for the detection and quantification of per- and polyfluoroalkyl substances (PFAS) in processed and packaged foods and raw agricultural commodities. Commonly referred to as “Forever Chemicals,” PFAS are ubiquitous and environmentally persistent industrial chemical contaminants found in soil, sediment, fresh water sources, and oceans that can bioaccumulate in agricultural products. There are over 4,700 different PFAS in existence. There has been a renewed international emphasis to limit consumer exposure to PFAS in the diet. However, surveillance and compliance goals require the adoption of international method performance standards and official methods of analysis beyond the limited-in-scope, single-laboratory validated methods currently employed by the U.S. Food & Drug Administration and the USDA Food Safety and Inspection Service to compile PFAS exposure data.

This project will be guided by an Advisory Panel (AP) of contributing stakeholders that will establish priorities and strategic direction to one or more working groups of volunteer subject matter experts tasked to develop consensus method performance standards. These will provide the analytical metrics for the development of new screening and confirmatory methods needed to:

- Substantiate the effectiveness of good agricultural collection practices
- Support regulatory compliance and surveillance programs needed to monitor prevalence of PFAS in the food chain

- Support mitigation and prevention strategies to minimize the risk for importers, exporters, and finished product producers

As an integrated project, AOAC will also:

- Foster the development of suitable testing and reference materials
- Foster the development of rapid diagnostic methods through the Reviewed and Recognized (R²) and Performance Tested Methods (PTM) Program within the Research Institute
- Develop a complementary training component to provide stakeholder guidance on method development and fulfill validation and verification requirements for the proper implementation of all validated *Official Methods of Analysis*.

BACKGROUND

Per- and Polyfluoroalkyl Substances (PFAS) are a category of manufactured chemicals that have been used in industry and consumer products since the 1940s because of their useful properties. There are over 4,700 registered PFAS compounds being used in products and industries. They are used in a wide variety of industrial applications that include textiles, household products, firefighting equipment, automotive, construction, electronics and food processing and packaging. Some, e.g., perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS), have been more widely used and studied than others.

PFAS are persistent and toxic contaminants that break down very slowly. They are ubiquitous throughout the environment, the open waters of the oceans being the largest reservoir, though fresh water sources and soil are also known harbors for PFAS. They are also bio-accumulative products readily absorbed into soil and sediment through surface and ground water leaching and can build up in people, animals, and agricultural crops. The public health risks associated with these factors are therefore greatest in drinking water and animal feed; and, the consumption of fin fish and shellfish, fruit, milk, egg and egg products, and fresh produce. Contact from PFAS through their use in food packaging and food processing equipment (including non-stick cookware) is an additional public health concern.

Many governments and regulatory authorities are now seeking to enact new regulatory thresholds to control and mitigate the public health threat posed by PFAS. Most however are directed towards the development of environmental guidelines and mitigation strategies for drinking water and soil. Under the EU Persistent Organic Pollutants (POP) Regulation, PFOS and PFOA are now listed in Annex I of POPs Regulation, which means that they are prohibited. This includes their use in cosmetics and food contact surfaces. The Danish Ministry of Environment and Food banned PFAS chemicals in food contact paper, cardboard materials, and articles starting from May 2020. Denmark was the first country in the EU to ban PFAS in food contact materials. In the United States, the Environmental Protection Agency and state agencies have established maximum contaminant levels for drinking water and groundwater. However, there are no federal or state safety standards related to PFAS for soil in grazing or foraging areas, or for animal feed. Likewise, there are no federal safety standards for PFAS levels in food products.

Legislation is currently under consideration in a number of US House and Senate Subcommittees to enact coordinated efforts between the EPA, USDA, and HHS to help reduce human and animal? exposure to PFAS and expand upon legislation signed into law in 2019 .

THE ANALYTICAL CHALLENGE

The ubiquity and sheer number of PFAS analogs pose a daunting analytical challenge for testing in foods. Whereas most of the surveillance and testing programs have focused on soil, sediment and water using validated and uniformly accepted methodologies, testing capabilities for contamination, susceptible bioaccumulation in associated agricultural food matrices, and for leaching into processed products from packing and food contact surfaces are minimal. This represents a significant gap for government and public health agency programs tasked to assess human exposure and risk in foods.

In the U.S. the Food & Drug Administration and the USDA Food Safety and Inspection Service employ LC-MS-MS methods to test for PFAS in food. Each are in-house, single-laboratory-validated; each are limited in scope. The FDA method can detect 20 PFAS compounds; the FSIS method can detect 16 PFAS. Neither methodology is purported to detect those PFAS currently approved for use in food packaging. Additionally, there are no current standards and methods development activities within ISO TC 34 (Food Products).

AOAC SEEKS YOUR SUPPORT

AOAC INTERNATIONAL recognizes the need to address the current gap in analytical capabilities to detect PFAS in food, food contact surfaces and food packaging. Through its global stakeholder communities and subject matter experts, we propose to identify and prioritize all PFAS that pose a food- and agriculture-related risk to consumers, and to develop method performance standards in support of fit-for-purpose *Official Methods of Analysis* to detect relevant PFAS in a wider range of matrices. The adoption and implementation of such compendial methods will provide the necessary confidence in human exposure data to drive the development of future public health guidance and regulatory requirements.

The PFAS Project will be guided by an advisory panel (AP) of funding organizations to confirm priorities and working group objectives. This panel will meet quarterly to review progress and consider additional objectives.

To launch this effort, AOAC INTERNATIONAL is asking organizations to join this important project with a contribution of \$10,000. Other levels of contributions will be considered as well¹.

Funding will support the following aspects of the project²:

- Identification and recruitment for working groups and members
- Facilitating AP meetings, working group and subgroup meetings (when needed) for drafting of consensus documentation
- Coordination of all program meetings
 - Up to two (2) annual in-person program meetings
 - Working group meetings and subgroup meetings (both in-person and web)

conference)

- Processes for drafting documents and consensus building
- Publication of approved consensus documents
- Discounts for program sponsors on AOAC Consulting Services
- Travel for no more than three (3) invited key stakeholders/experts needed to complete the work

BENEFITS AS AN ADVISORY PANEL MEMBER

- Establish working group activities based on your priority analytical needs
- Drive the development of internationally recognized performance standards and *Official Methods of Analysis*
- Engage with a select group that will set benchmarks for quality and product integrity
- Earn financial discounts on select AOAC INTERNATIONAL Science Programs
- ***Ensure that all testing data is accurate and reliable, and that will help facilitate consumer safety and trust***

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¹AOAC INTERNATIONAL will continue to explore a multi-tiered funding schedule to avoid any unintended barrier to the ultimate success of this project and to encourage as many stakeholders to get involved as possible.

²Costs associated with method submission and review are separate and in addition to the fees for launching any workstream.