

Bridging Science and Regulations: Internationally Harmonized Methods for Improved Food Safety and Quality Control

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In an increasingly interconnected global food supply chain, protecting public health while enabling fair trade requires internationally harmonized testing methods. AOAC INTERNATIONAL advances this goal through consensus-based standards development and method validation frameworks that support standardized, globally accepted analytical methods.

For many applications, *Standard Method Performance Requirements* (SMPRs®) serve as a transparent, consensus-driven mechanism for international method harmonization by establishing objective criteria prior to validation. By assembling diverse global experts and other stakeholders, the SMPR process reconciles differing operational and compliance needs into a single, consensus-based set of method performance targets, such as limit of quantitation, accuracy and precision. SMPRs serve as the primary evaluation benchmarks to judge whether a candidate method qualifies for the AOAC *Official Methods of Analysis* (OMA) status. Methods for determination of nutrients in infant formula are important examples of internationally harmonized methods established through the AOAC SMPR and OMA processes. Several recent standardization activities will be highlighted, including initiatives focused on analysis of chemical contaminants (such as PFAS, trace elements, and acrylamide), vitamins, novel foods, or characterization of dairy protein hydrolysates.

SMPRs are supported by validation guidelines, which establish a uniform framework for method validation studies and are especially important for evaluating test kits and other proprietary methods. For instance, AOAC recently developed new guidelines for the validation of methods for food allergens and gluten and is currently revising and expanding its microbiological method validation guidelines. These efforts promote the global acceptance of validated methods and generated test results, helping transform the vision of smart food safety and quality control into reality.