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The power of AOAC certifications and their impact on food safety

An Exclusive Interview with Patrick Bird, technical consultant at AOAC INTERNATIONAL and principal consultant at PMB BioTek Consulting

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Michelle Müller, Marketing Assistant at NEMIS Technologies:

Nice to meet you, Pat! Can you tell me how an AOAC certification differentiates itself from other certificate bodies and why AOAC certificates are so important?

AOAC INTERNATIONAL and its certification processes are globally recognized and the premier certification organization for the food and feed industry in the United States. Once a method has gone through our conformity assessment programs and achieved the certification, it is recognized not only in the US but globally as a rigorously and independently studied method and thus, safe to adopt.

The most common type of certification outside of AOAC comes from our European colleagues – MicroVal or AFNOR. We design our studies very similarly and try to harmonize as much as possible. The *Performance Tested Methods*℠ (PTM) program, which NEMIS has gone through, is different in that we offer much more flexibility. For example, European certification organizations are constrained to following ISO standards, meaning you must follow the standard pretty much as it is written. This does not allow you to tap into the potential of new and emerging technologies or possibly even new applications of an existing solution.

The AOAC Research Institute, which oversees the PTM program, works under validation guidance that aligns closely with ISO 16140-2. However, we have added flexibility as we send individuals to a technology provider and validate their technology on-site with an independent analyst and an AOAC consultant present or go outside the guidelines when needed.

What does the AOAC certification process entail?

To obtain the AOAC PTM certification, a company (the method developer) has to undergo a 6–12-month process, working with AOAC technical consultants to design a validation outline that will capture the key components. After the AOAC staff reviewed the application, the method developer completes its validation study. The AOAC Research Institute then selects an independent lab to complete the independent validation study. Furthermore, the AOAC Research Institute facilitates expert peer review of the results of both validation studies. Upon completion and approval, AOAC RI grants the *Performance Tested Method*℠ certification, and

the organization is licensed to use the certification mark. The certificate is then reviewed for renewal the following year.

In the study, in addition to matrix and specificity studies, we focus on quality control and the manufacturing aspect of the validation. We look at product consistency and evaluate multiple instruments as part of a validation study to ensure repeatability. We also conduct a so-called robustness study, where we will modify the parameters of the method to see what happens if they mistakenly use an uncalibrated pipettor or left a product in an incubator for too long, etc. Essentially, we want to see if it is possible to produce the same results when the method is not run 100% correctly.

That's right! If something works in the lab that doesn't necessarily imply it will work in the same real-life situations. There are so many mistakes that can happen during the process.

As a method developer, you can only control so much. Field testing is critical from a company standpoint. It is essential to get the method in the end-users in hands – multiple users from different walks and backgrounds. This approach will tell you if the method will work with minor changes in the process.

What trends do you see in the future of food safety? In what direction will the industry go?

From an industry standpoint, the first thing I see is that more emphasis will be put on quantification, especially for pathogens. While the European market will allow certain levels of *Listeria* in their products, the US follows a zero-tolerance approach for the majority of the products. I anticipate more data being requested on the prevalence of pathogens to develop guidelines allowing certain levels of pathogens in certain products. The USDA Food Safety Inspection Services, one of the big food safety organizations in the US, has requested more data for *Salmonella*, *Campylobacter* and *Listeria* from a quantitative standpoint. This would be in addition to continued traditional analysis, enriching and detecting pathogens that are present in really low levels, because it is an important safety measure.

Secondly, improvements in technology will have a considerable impact. Questions like "Is *Salmonella* present?" or "Is there a pathogenic *E.coli* present?" are pushed into the background, and instead, the focus will be on questions like "What are the serotypes? What are the potential virulence factors or genes that are there?". As we learn more, I think we will start to see technology moving that way.

If a potential customer would ask us: Why should I care about the AOAC certification?

Having the AOAC certification mark tells you that this method has been independently evaluated and peer-reviewed by experts with over 100 years of combined experience in microbiology. It ensures that when people run your method as described, it will give them an accurate result and keep their customers safe.

Patrick Bird works as a technical consultant at AOAC INTERNATIONAL, where he works on the development of validation outlines for the *Performance Tested Methods*℠ (PTM) and O*fficial Method of Analysis*℠ (OMA) process as well as assisting in the development of new programs. Moreover, Pat is the principal consultant at PMB BioTek Consulting, whose role is to work with method developers, contract laboratories, cultivators, and industry to identify solutions to emerging microbiological issues, optimize method workflows and design validation studies. Pat holds a BS in Microbiology from the Ohio State University in Columbus, Ohio and a MS in Food Safety from Michigan State University in East Lansing, MI.