Ensuring Brand Protection & Consumer Safety

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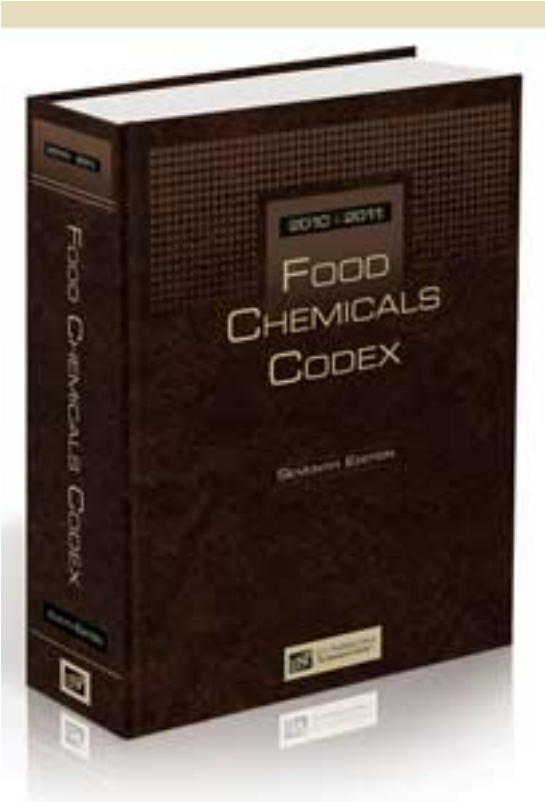

Food fraud. It is a subject that many of us in the food industry have been aware of for quite a while. But only recently has this threat reached the mainstream of public discourse. Food fraud is the intentional adulteration of food with less expensive ingredients for economic gain — and it has been observed in the marketplace for at least the last century — and other times in history.

Over the years there have been sporadic reports in general media of incidents involving adulteration of milk, wheat flour, spices, fish, meat, olive oil, honey, wine, tomato and numerous other food products, substituting cheap ingredients while selling at a premium price. But the issue really captured national and international headlines in 2007 and 2008, when two Chinese food fraud scandals broke involving pet food and infant formula/milk products adulterated with melamine and other deadly ingredients.

These incidents not only cheated consumers (as all food fraud does), but tragically caused significant harm and even the deaths of infants and companion animals. The food fraud issue in the U.S. and abroad is now causing a resurgence in media coverage and is increasing consumer awareness of the problem — as well as capturing the attention of Congress, which is currently considering legislation aimed at bolstering food safety. Moreover, the Obama administration has made revamping and reinvigorating our food safety system a priority. This should be a stark message to companies that don’t consider adulteration a major threat to their business that it is high time to reconsider.

On March 30, *The Washington Post* published an article titled “FDA Pressured to Combat Rising ‘Food Fraud.’” The story, which received widespread syndication across the country and caught the attention of policymakers, noted that food fraud is a growing problem as more products are imported and a tight economy heightens competition. These are indeed two of the major challenges, but there are other critical elements at play here as well. Among these is the highly publicized lack of resources for the U.S. Food and Drug Administration (FDA) and other regulatory agencies charged with keeping the food supply safe, and the fragmentation of the U.S. food regulatory system.

Another challenge to preventing food fraud is outdated science. For example, the Chinese milk scandal highlighted the dairy industry’s reliance on the Kjeldahl procedure, which is more than a century old and has an inherent weakness in that it measures all organically bound nitrogen rather than protein, thus making it easy to fool the test by adding a nitrogen-rich substance like melamine to milk.

“The Fake Food Detectives,” a February 8 article in *Newsweek*, also highlighted the problem. It cited a startling statistic — the counterfeit food industry is worth about $49 billion a year. It also noted that the players involved in food fraud run the gamut from small operations involving a few people to organized crime syndicates.

Both articles noted work being done to address the food fraud problem — development of new detection tools; new programs such as Michigan State University’s Anti-Counterfeiting and Product Protection Program; and criminal prosecution of those found to be involved in perpetrating food fraud, among other activities. I would add another critical element — the existence of, and adherence to, industry-wide quality standards for food ingredients.

Processed food represents an increasing proportion of the modern diet, and adulterated ingredients have been the source of the problem in many of these food fraud episodes. (Sweeteners and oils are of particular concern.) Standards that define the identity of an ingredient, as well as designate a minimum quality, purity and consistency, are key to knowing that an ingredient is, at the most basic level, and what it claims to be as opposed to an inferior or harmful substance.

Some quality standards are developed in-house by food companies; others, by government and nongovernmental agencies. These quality standards enjoy varying degrees of recognition — within legal regulations, or throughout the industry as voluntary standards. The U.S. Pharmacopeial Convention (USP), a nearly 200-year-old standards-setting organization, sets such standards for food ingredients, which are published in its *Food Chemicals Codex* (*FCC*). These standards can play a very important role in protecting both manufacturers and consumers from food fraud.

The *FCC* adds value as a global resource by offering quality standards that cover the full range of possible food ingredients, including colorings, flavorings, nutrients, preservatives and processing aids. It is used by finished food and beverage manufacturers, food chemical and ingredient suppliers, food quality control professionals and regulatory bodies around the world for managing supply chains,

maintaining regulatory compliance, and conducting day-to-day business transactions between food manufacturers and ingredient suppliers.

The strength of *FCC* standards lies not only in their sound science, but in the open and transparent process through which they are developed (input is welcome from anyone in the food industry or any other interested organization, including the FDA or individuals) as well as their independence. The *FCC* provides a neutral compendial resource that both suppliers and manufacturers can benefit from and rely upon.

These standards can be of significant benefit to suppliers, offering a means of demonstrating quality to their potential purchasers, and they can also be of benefit to manufacturers, allowing them to have confidence that the ingredients they purchase are what they claim to be, as opposed to a contaminated, adulterated, diluted or otherwise inferior product. At a time when episodes of contamination and adulteration of foods have contributed to low public confidence in the food supply, the *FCC* is a way for manufacturers to demonstrate their commitment to quality. Of course, it also can eliminate the burden of developing in-house standards in many cases.

The latest edition of the *FCC*, its seventh edition, was released in March 2010 and includes standards covering quality and purity for 1,100 food ingredients. These standards include the ingredient’s chemical formula, structure and molecular weight; function and definition; identity tests, assays and impurity limits; and packaging, storage and labeling information.

In addition, the *FCC* includes validated methods in 11 appendixes with step-by-step guidance to analyze food ingredients, and demonstrate their authenticity, quality and purity. These appendices cover enzyme assays, essential oils and flavors, fats and related substances, carbohydrates and flavor chemicals, among others.

It also includes a section featuring additional information and industry guidance, such as general current good manufacturing practices (cGMP) guidelines for food chemicals; a comparison of cGMP elements for foods and excipients (the non-active compounds in pharmaceuticals); an introduction in various analytical techniques and the AOAC International/International Organization for Standardization (ISO)/International Union of Pure and Applied Chemistry (IUPAC) guidelines on method validation.

Quality standards such as those included in the *FCC* are not the only piece of the puzzle. But they are an important component of the safety net that protects us all and ensures the integrity of our food supply. With pressures to keep prices low and innovative new ingredients continuously coming on the market, temptation unfortunately can abound for bad actors to infiltrate the food manufacturing chain.

Offers of a less expensive raw material or other ingredient may be legitimate; they may not. Whatever an ingredient is, wherever it comes from, these materials look very similar (if not seemingly identical) when they arrive on the loading dock. Verifying the ingredient is essential, as food manufacturers have a lot to lose in

terms of potential civil and criminal liability, brand reputation and customer loyalty.

Of course, in a case where a product recall is necessary, the financial burden is severe. And that's just the beginning. While food production and marketing is a business — and a very competitive one at that — we should also remember that all of us in the industry have an ethical obligation and a responsibility to protect consumers.

Many product adulterations may not cause harm to customers' health — but nonetheless defraud them of what they have paid for (not much of a consolation). However, the potential for harm is there and it is significant, as demonstrated in the melamine incidents. This should be a paramount concern for us all.

Markus Lipp, Ph.D., is the director of food standards for USP. He has 20 years of experience in food and food ingredient issues, bottled water quality standards and genetically-modified agricultural products. For more information about the FCC, visit www.usp.org/fcc [1].

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