Flavor Trends, Optimizing Flavor Formulas and More

Select highlights from the annual meeting of the National Association of Flavors & Food-Ingredient Systems.

During the annual convention of the National Association of Flavors & Food-Ingredient Systems (*www.naffs.org*), Christine Daley (AromaLink), 2014 NAFFS convention chair, was officially appointed president. In the main session, Patrick McNamara (Scarinci Hollenbeck) discussed various legal issues facing the food and flavor industry, including: the U.S. Food and Drug Administration's (FDA) proposed changes to the Nutrition Facts Label, which include a revised serving size requirement and new labeling rules for certain package sizes, as well as an updated design; Cargill's challenge to Truvia's natural status and PopChips' court settlement over its use of the term "all natural," illustrating that companies are being targeted for the natural term and may step away from such claims in the future; the FDA's gluten-free limit of less than 20 ppm of gluten, adherence to which may not shield manufacturers from gluten-free challenges in court; and action against J.M. Smucker Co. products containing hydrogenated oils and trans fats. The scrutiny of flavors and food products is greater than ever.

Meanwhile, said McNamara, the FDA has proposed regulations for e-cigarettes, which would likely take effect in 2015 and treat e-cigarettes similar to conventional tobacco products. E-cigarettes are often flavored and so, like flavored hooka and novelty cigar products, they are facing scrutiny for the flavor materials contained therein. McNamara reiterated that the Flavor and Extract Manufacturers Association (FEMA) has consistently explained that GRAS (generally recognized as safe) flavors for foods and beverages are not assessed for use in e-cigarettes.

"E-cigarette manufacturers should not represent or suggest that the flavor ingredients used in their products are safe because they have FEMA GRAS status for use in food because such statements are false and misleading," FEMA noted in an April 2014 communique.

Ken Bickerton (Phase Associates); all photos courtesy of NAFFS.

Patrick McNamara (Scarinci Hollenbeck).

OSHA Matters for the Flavor Industry

Ken Bickerton (Phase Associates) discussed matters related to compliance with the U.S. Occupational Safety and Health Administration (OSHA). He explained that OSHA is currently seeking comments on the establishment of exposure limits for flavor ingredients. Complicating matters, said Bickerton, in some instances OSHA can cite companies if employees are harmed via chemical exposure, even if the exposure level is below the existing OSHA exposure limit. This creates a level of uncertainty for any company working with chemicals as compliance with OSHA standards is not necessarily a blanket protection from action.

Currently, the U.S. National Institute of Occupational Safety and Health (NIOSH) is exploring exposure levels for diacetyl and acetyl propionyl, which are being targeted due to concerns over bronchiolitis obliterans. These limits could conceivably be set in the low ppbs, Bickerton noted, a requirement that is very difficult to meet. He added that, to date, these limits appeared to have focused on flavorings, but the limit would not make a distinction for butter-derived diacetyl if flavorings are in any way

involved. (To date, NIOSH is not scrutinizing roasted coffee, which emits diacetyl.) Diacetyl formed by formulas could also be targeted. Bickerton added that other diketones are now being scrutinized by regulators.

Bickerton discussed other safety issues. For instance, he said, it is important to oversee flammable powder levels for anyone handling powders. In addition, companies should limit employee exposures to hexavalent chromium by having any welding of stainless steel done with appropriate ventilation.

Natural & Efficient Flavor Creation

The trend toward WONF (with other natural flavors) flavor types offers unique sensory opportunities, noted flavorist and *P&F* columnist John Wright. This, he said, follows the broader trend toward natural flavors, which can often mix some novelty with familiar profiles.

Flavorists are being charged with delivering more natural and realistic flavor formulas, which can require slightly pricier ingredients to make them consumer-preferred, while also controlling costs. Wright noted that the two largest costs in formulations are the raw materials and the compounding process. About 90% of the ingredient cost lies in a handful of ingredients, while the price of compounding is driven by the total number of components in a formula.

Wright theorized that flavorists often use too many materials for a flavor. In the case of realistic flavor profiles, formulas should not include extraneous compounds not found in the natural named food. These extra materials can add costs, he said, without adding value.

By bringing down the overall number of components, flavor suppliers can lower the overall selling price. This can be done without sacrificing aesthetics if the formulators maximize synergistic effects for an overall more efficient flavor, Wright added. Using chefs as an example, he explained that one can use ingredients with components in common to achieve overlapping or linking aromatic impressions.

This optimization process should also de-emphasize the use of flavor keys, which can increase costs and add materials that may not be critical to the final flavor. Often, he said, flavors can become too complex via the use of keys, flavor blending or impulsive aesthetic choices.

But how many is too many? Adding 200 ingredients to a flavor is inefficient, Wright argued. Instead, he suggested that formulators review creative choices and revisit flavors after a break to edit out unnecessary elements. He added that blending flavors rarely works, either; the many additions result in a whole that is less than the sum of its parts.

In a raspberry flavor, said Wright, raspberry ketone is a key cost driver. Many flavorists overdose this material in formulas relative to the dose found in the fruit in nature, which puts it off the mark. The same can be said for the amount of vanillin in many vanilla profiles.

Wright acknowledged that core listings can be driven by flavor cost reductions and companies' desire to reduce headcount and outsource expertise. They are also motivated by the misperception that all flavor companies essentially have identical expertise.

This system can lead to projects with limited timelines, resources and plant trials, Wright noted, creating pressure on creative teams. Communication can often be a major hurdle, with "fuzzy" iterations taking place among formulation, marketing and applications staff.

John Wright discussed efficiency in flavor formulas.

From left: Christine Daley (AromaLink), 2014 NAFFS convention chair and incoming president, and chef Gary Patterson of McCormick & Co.

Wright closed his talk with an interactive session that displayed a highly simplified raspberry profile that included 10% raspberry ketone, 0.5% zingerone and 0.05% acetophenone.

The Chemistry of Cocktails

In the 1850s, an American bartender named Jerry Thomas helped popularize cocktails, a trend that truly took off in the United States during the Prohibition era, during which the blending of flavored substances with liquors served to improve taste and potability of alcoholic drinks. During an entertaining interactive talk, Steve Pearce (Omega Ingredients) explained that the classic cocktail is three parts spirit, two parts sweet component and 1.5 parts sour component. The talk was timely as "mixology," the creation of unique blended cocktails, has taken off in recent years. Pearce displayed how some classic alcoholic beverages have always comprised interesting flavor/aromatic notes, including dandelion leaf, burdock, fennel, juniper, cucumber, rose, citrus, licorice, rose, vanilla, black pepper, cardamom, cucumber, jasmine, bitter orange and angelica root.

Pearce presented several samples of his concoctions, including a drink containing one part each of Campari, fireball bourbon and sweet vermouth, presented with a slice of bitter orange peel. The Campari contributed a bitterness to the drink, which imparted a unique flavor character. Meanwhile, a Bloody

Steve Pearce (Omega Ingredients).

Mary was presented, which included tomato juice, lime juice, Worcester sauce, celery, Tabasco sauce and black pepper. The Worcester sauce added an infusion of umami via anchovies. Interestingly, Pearce used a dash of sherry to smooth out the mixture's flavor. The recipe can be modified with a wasabi spirit for some unique heat, Pearce added.

Tracking Flavor Trends

Chef Gary Patterson (McCormick) presented several dishes and discussed how flavor acceptance progresses along an acceptance curve that moves from emerging trend to the mainstream menu to retail over a period of two to four years. Trends are coming from both fine dining and street food, trickling both up and down. Trends that have broken big in recent years include pumpkin pie spice, sea salt, hibiscus, coconut water, agave nectar, chipotle and wasabi. Active trendspotting keeps product developers ahead of the curve, Patterson explained. At the same time, new flavors can gain rapid consumer acceptance if blended with familiar flavor profiles.

He said that the industry has just scratched the surface on seasoning blends. For instance, *dukkah*, a Middle Eastern spice mix, has potential for popularity. South America, Japan and Korea are driving worldwide ethnic dish trends, Patterson added. Consumers value ingredients for their flavor and ethnic roots. There are "new" peppers emerging on the scene, including tien tsin, aji amarillo, chile de arbol and guajillo, while flavors such as tomatillos and chamoy are emerging from Mexican cuisine onto the larger world food stage.

For information on future meetings, visit www.perfumerflavorist.com/events/calendar.