

SOCIETY NEWS

THE SOCIETY OF FLAVOR CHEMISTS, INC



Board of Directors
2015-2016

President's Message Mary Foster 2015—2016

Winter greetings to all! I hope you had an enjoyable holiday season.

During the winter break the SFC Board and Committees have been hard at work behind the scenes. Most notable was the evolution of the Los Angeles meeting in January. Many thanks to our West Coast Chairperson, Maria Olson, and her cohorts, Mariano Gascon and Aaron Graham for making this happen. The January meeting came about from the desire to have a traditional SFC meeting, separate from other groups. We will continue to participate in the March meeting with NAFFS and CSA.



Continued—page 2

Chairperson: Cynthia Lipka
Prinova USA
285 E. Fullerton Avenue
Carol Stream, IL 60188
Phone: 630-909-2212
chairman@flavorchemist.org

President: Mary Foster
ZoomEssence, Inc.
1131 Victory Place
Hebron, KY 41048
president@flavorchemist.org

Vice-President: Deborah Osborne
Mondelez Global LLC
941 Route 10
Whippany NJ 07981
973-909-1148
vice-president@flavorchemist.org

Secretary: Lisa Vaughn
Flavor Producers Inc.
28350 West Witherspoon Parkway
Valencia CA 91355
661-257-3400 Phone
secretary@flavorchemist.org

Treasurer: Michael Bloom
Flavor & Fragrance Specialties
3 Industrial Avenue
Mahwah NJ 07430
201-825-2025
treasurer@flavorchemist.org

In this issue:

	7 Meetings
1 President's letter	10 Flavorcon 2015
3 New members	14 ChemSources
5 Calendar of meetings	15 GRAS-Risk management
6 Committees	16 Is Bitter the new black?

President's Message-continued

Mary Foster 2015—2016

For the past few months, a team of members led by Cathianne Leonardi (Membership Committee Chairperson) have been engrossed in reviewing the SFC syllabus and the membership test questions. As ingredients, technology and regulations change, we must adjust our knowledge base to remain current and relevant. With the updated syllabus, we will assure that candidates and their sponsors are aware of the expectations that the SFC has of incoming members.

For the past 5+ years the SFC meeting Chairpersons and Board members have been hand-carrying and shipping our electronics from location to location. This cumbersome arrangement came with significant shipping costs and the occasional misplaced item. To alleviate the situation, we are investing in electronics and audio/visual equipment for each meeting location. Our Website Committee Co-Chairperson, Terry Miesle, has coordinated the first purchase - the equipment for West Coast meetings. Additional meeting sites will follow, until all are supplied with their own set.

We have steadily seen an increase in the number of posts on our social media sites, mainly in our LinkedIn public page. Board members are routinely contacted to provide quotes, recommendations and opinions by job posters, reporters, and other organizations. To these requests, we politely suggest that the person or group reach out to all SFC members via our LinkedIn group. Please continue to check in from time to time to see what new discussions have been posted. And don't be afraid to add your thoughts to a post or report a post that is inappropriate.

The SFC Board is delighted to provide you with the opportunity to own a SFC shirt or jacket. Many of you have seen the prototypes that I have brought to meetings, and we are getting closer to getting them out to you. A notice will be sent to you soon with all the details when we are ready to take orders. At this time, these will be offered to members in good standing in 2016 only. (To be a member in good standing, you must be current in your dues payment.) Despite our pleas, we did not have any volunteers come forward to help with the "Fashion Committee" efforts to process and distribute them. I will be managing the ordering and shipping of these items, so please be patient. It is not too late to volunteer, so if you would like to help, please let me know. Even something as simple as creating mailing labels would be helpful and appreciated. Many, many thanks to the Website Committee for getting the ordering site created and running. If you would like to see this offer extended, or want additional/different items, I'd like to hear your feedback. I'm looking forward to seeing you all at future meetings in your SFC attire.

Wishing you a happy and prosperous New Year!

Best Regards,

Mary Foster



Welcome, New Members!

From the September Meeting

Holly Bohlke—Apprentice

Holly was born in Chicago and is currently a resident of the Norwood Park neighborhood. She has a BS from the University of Illinois in Food Science & Nutrition, and has recently earned her MS from the same institution with their on-line program. She is a passionate Food Scientist and loves to cook. Other hobbies include playing softball, watching sports, DIY home improvement projects, and travelling. She also likes to travel to various professional baseball stadia with her husband Dan. She is currently a beverage flavor chemist with Imbibe.



Derek Rankin—Apprentice

Derek is a musician born and raised in New Jersey. He graduated with a BS degree from Centenary College with a degree in Biology and also has an AA in Education. While working at Merck & Co, he was contacted by Dolf DeRovira to join his team at Flavor Dynamics as an entry level lab technician. He has been in the industry since, and is currently living in Fox River Grove IL with his bulldog. He now works as a a

Welcome, New Members!

From the October Meeting in Newark



Jason Darling of Spicetek Flavor & Seasonings was elected Apprentice member. He was sponsored by Jerome Lombardo, Elaine McGlynn, and Bill Choudry.

Born and raised in New Jersey, Jason graduated from Delaware Valley College with a BS in Animal Science. He entered the food industry ten years ago, working for the quality control department at Spicetek Flavors & Seasonings. There he was exposed to many aspects of the flavor industry. In 2010 he transitioned into flavor creation and began his journey into the world of flavors. Outside of work, Jason enjoys his horses, the outdoors, and spending time with his family.

Yongmin (David) Wang was elected Certified at the October meeting. David works for Altria, and was sponsored by Alfred Gossens, Barbara Taylor, and Christopher DiNovi.

After receiving his BS and MS in Food Science from Jiangnan University in China, David joined the University's faculty. In 2000 he received his PhD in Food Science from Rutgers.

He joined Sara Lee Coffee & Tea in 1998, and became a product manager in 2001. While at Sara Lee, he became an international coffee tasting expert. He is now a senior staff flavorist for Altria, where he develops flavors for non-tobacco and tobacco products.





2015—2016 SFC Meetings!

February 11, 2016 – Newark, NJ

March 10, 2016 – Anaheim, CA

April 14, 2016 – Cincinnati, OH

May 12, 2016 – Newark, NJ

June 19, 2016—Chicago, IL (IFT)

Committees

Arrangements:

Wai Lam

arrangements@flavorchemist.org

Audit:

Dieter Bauer

audit@flavorchemist.org

Bylaws:

Dolf DeRovira & Jan Ford

by-laws@flavorchemist.org

History:

Veronica McBurnie

history@flavorchemist.org

historian@flavorchemist.org

Library:

Aaron Graham

library@flavorchemist.org

Media:

Shane T McDonald

media@flavorchemist.org

Membership:

Cathianne Leonardi

membership@flavorchemist.org

Mentorship:

Steve Ruocco & Dennis Kucharczyk

Steve_Ruocco@mccormick.com

Dennisk@comcast.net

Nominating:

Dolf DeRovira

nominating@flavorchemist.org

Scholarship:

Belaynet "Bill" Choudhury

scholarship@flavorchemist.org

Symposium:

Cyndie Lipka

symposium@flavorchemist.org

Webcast:

Lisa Dierbach

ldierbach@kraftfoods.com

Website Committee:

Terry Miesle

website@flavorchemist.org

Chicago:

Cyndie Lipka and Cheryl Udzielak

chicago-meeting@flavorchemist.org

East Coast:

Belaynet "Bill" Choudhury

program@flavorchemist.org

Midwest:

Mike Weller & Dave Wolfenberger

midwest-committee@flavorchemist.org

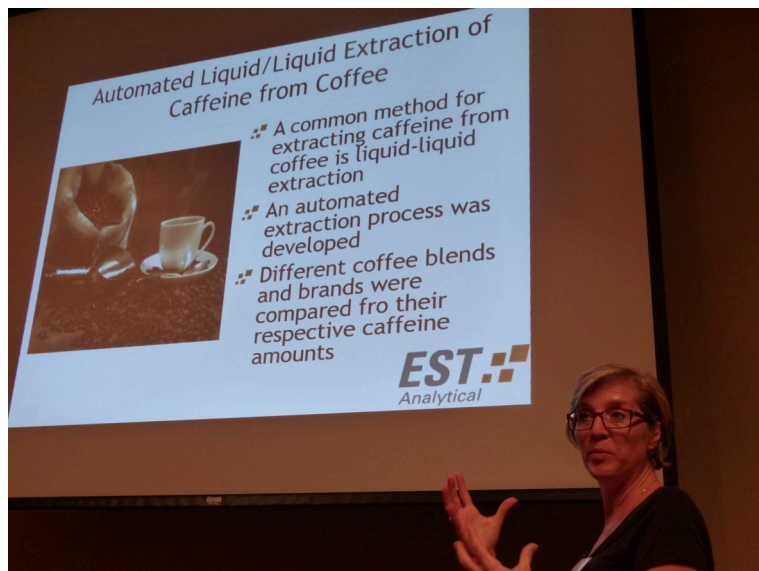
West Coast:

Maria Olson

west-coast@flavorchemist.org

Get involved in your Society! Consider joining one of these committees!

September Meeting in Chicago



419th meeting of the SFC held Sept. 17th, 2015 held at the Hyatt Rosemont in Rosemont, IL. Over 80 people were in attendance.

Preceding the meeting was the Chemical Sources meeting, with Jim Kavanaugh of Bedoukian and Sean Quigly of Sensus presenting.

Ann Jurak of EST Analytical presented some of their autosampler and distillation technology, with examples of liquid/liquid extraction of caffeine from coffee, volatiles analysis of whiskey, and flavor and flavonoids recovery in tea.

The next speaker was Bill Shores, a master gardener, (urbanedible.net) who presented on "Flavorful plants from a chef's garden, a sampling of lesser known edibles". He designed a garden in Chef Rick Bayless' back yard. Because of the very limited space,



October Meeting

The October meeting was held at the Doubletree in Newark, NJ.



Dr. Devin Peterson—University of Minnesota



Dr. Gregory Pace—Sun Chemical corp.

The October meeting was held in Newark, NJ at the DoubleTree Inn. Sixty people were in attendance. Dr. Devin Peterson of the University of Minnesota discussed the research activities in his lab, including flavor modulation and salt reduction strategies. Dr. Gregory, Global Regulatory Manager of Sun Chemical presented on food contamination issues due to packaging materials.



Society of Flavor Chemists Meeting

January 21, 2016, Los Angeles, CA

Morning: UC Riverside Citrus Variety Collection

We knew we were nearing our destination when we were immediately overtaken by vast citrus groves on the either side of the vehicle once past the University of California in Riverside campus. After being let in through the security gate we were greeted by Dr. Tracy Kahn who had before her a table with a cornucopia of citrus varieties. For the next hour and a half we were taken on a virtual tour of the history and future of citrus as well as a literal tour of the groves where most of those varieties are growing and being cultivated.

It was a feast for the senses, tearing into the peel and flesh of all the varieties. The chance to see, smell, taste and touch the vastly different fruits all from the same genus. It was remarkable to see how easily hybridized these trees are and how with even just a touch of naturally occurring solar radiation a mutation of one branch can lead to such an incredibly drastic change in the appearance, smell and taste of the fruit. Dr. Kahn went into detail about rootstock, cultivars and germplasm. Then it was back to the vehicles for the trip back to the LAX Marriot for lunch and the afternoon presentations.

Afternoon: Citrus and Beer

The afternoon sessions were packed full of presentations on citrus as well. Pia Henzi of MCI Miritz kicked it off with a particularly gloomy forecast for the orange market and only one reference to Donald Trump. The honesty was appreciated by all and reiterated less emphatically by the following presenter; Lee Beuk from Frutarom Citrus Specialties.

After a short break we were treated to an even more in-depth academic survey of the history, biology and chemistry of citrus by Dr. Kahn entitled "Beyond Oranges, Lemons and Grapefruits". Givaudan's Global Product Manager, Dawn Streich was the next to speak and discussed the partnership between UCR and Givaudan for their TasteTrek Citrus Program. This was followed by Jim Llano of UCR who encouraged those in the room take advantage of the opportunities available to us through their corporate and strategic partnerships. Dr. Georgios Vidalakis of California's Citrus Clonal Protection Program closed out the citrus portion of the afternoon with a warning against the alarming spread of citrus diseases. He then went into detail on the model they are employing for the management and mitigation of the diseases. This included his contact information for anyone who would like samples of their disease resistant varieties.

The afternoon was closed out by a very informative session on "Citrus in Beer" given by Tom Nielson the manager of raw material development and quality for Sierra Nevada Brewery. The presentation and samples were well received to say the least.

David Wolfenberger



FlavorCon 2015

Flavorcon 2015 is the second of a biennial flavor industry meeting sponsored as a for-profit event by Allured Publishing, publisher of *Perfumer & Flavorist* and other flavor related publications. It was held November 16–17. Like 2013 conference, it was held in Atlantic City NJ at the Borgata Casino. In addition to various speakers, companies could make paid 15 minute presentations on their products. Also, 30 companies had table top displays, which were available for viewing at every break. There were about 350 attendees.

Flavor ingredient tasting session

Moderated by Judith Michalski, panelists Cyndie Lipka, Robert Pan, and Alpa Roman.

Chemicals included natural veratraldehyde (FEMA#3109, vanilla-like, sweet enhancer from Lermond),

2-Acetylpyrazine natural (FEMA#3126, nutty, green, from Xiamen Bestally), gamma-Decalactone natural (FEMA#2360, peachy, fruity, from Natural Advantage,)

Absolute Immortelle (FEMA#2592, hay-like and floral from Robertet)

Natural Ethyl Vanillin (FEMA#2464, sweet, custard-like vanilla). This last one was controversial as it has not been positively identified in nature and there are lots of opportunities for regulatory complications due to the heavily regulated vanilla industry.



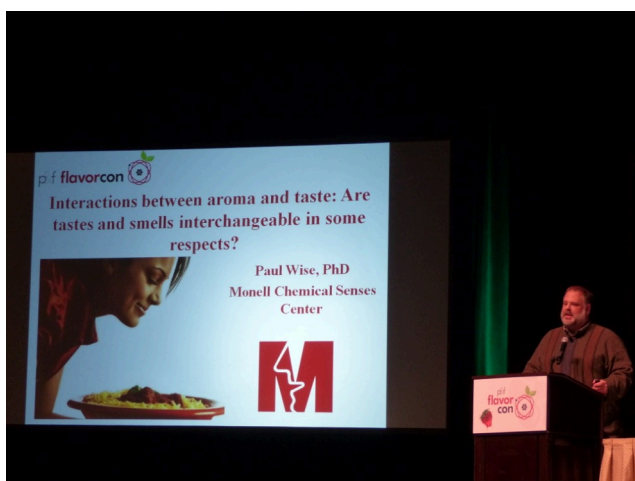
FlavorCon 2015, cont'd

Liking is not enough

Forecasting NPD sensorial success. Speaker was Laura Finkelstein, VP of Sensanalysis. – This started with a discussion of NPD failures. 85% of products launches fail, are recalled, or reformulated, even though Stage Gate process was followed religiously. Sensanalysis ascribes this to “consumer naivety”. NPD is driven by professional R&D and sensory panels with a scientific outlook, but consumers buy based on a holistic experience driven by emotion. Also, the packaging and scent and/or flavor need to be congruent. The presentation tended to be oriented more towards fragrance, but the idea is that the market positioning, the packaging, and the scent needs to have the same message. For example, a light floral air freshener flopped when it was put into a dark green can. Sensanalysis accomplished testing by recruiting consumers in the target market. The consumers are screened for their abilities to articulate their emotions and responses. The six-point success model was: 1) get consumer input during the entire NPD process, 2) find consumers who can articulate their sensorial sensations clearly 3) go beyond liking to uncover emotions 4) create a holistic story (all five senses), 5) use a holistic approach to research and 6) take sensorial interactions into consideration.



Robert Margolskee of Monell gave an overview of the Monell Chemical Senses Center (Philadelphia, PA) and discussed sweet taste mechanisms. He described the taste receptors in the tongue, but also said that these receptors are found throughout the body. For instance, sweet receptors in the gut and pancreas monitor glucose levels, which control satiety and insulin production. Amylases in the saliva break down starch to sugars so they can be detected by sweet receptors and get the digestive system ready. Also discussed were the mechanisms for sweet taste, including multiple channels for detection.



Paul Wise of Monell presented about interactions between aroma and taste: are they interchangeable in some respects. The brain perceives flavor as a modality with inputs from various sensory systems. For example, lemonade flavor is a fusion between the aroma of lemon with the sweetness of sugar and the sourness of citric acid. Some aromas are associated with sweet products. Vanilla odor is usually associated with sweet foods like ice cream. Therefore, sweetness taste can be increased by the use of vanilla extract, even though vanilla extract is not sweet. Using brain mapping techniques, it can be shown that bacon aroma will increase the salty response in the brain. This is called congruency. This does not work if a “salt” aroma is combined with a sweet flavor, or a “sweet” aroma is paired with a salty flavor. Various taste:taste interactions have been documented; suppression or enhancement of one taste by another, depending on concentrations. Some of these interactions are time-dependent. The presentation concluded that smells can in some ways function like tastes. The smells can modulate perceived taste intensities, and this modulation is happening in the brain. Odors can be used to suppress bitter tastes.

FlavorCon 2015, cont'd

Polly Barret of Kalsec® presented on dimensions of heat delivery. The human response to heat was discussed, as well as various pungent compounds in spices. The increased interest in hot and spicy foods was discussed, as well as up and coming spice combinations such as harissa, gochujang, sambal, and togarashi. This was followed by a discussion on pungency measurement, including the advantage of instrumental measurement rather than the traditional sensory measurement. The last topic was the importance of how the food matrix affects pungency perception, such as fat mutes heat and acid accentuate heat.



John Wright, flavor consultant, and author, talked a bit about chili spice extracts, including jalapeno, chipotle, mirasol, and guajillo. The balance of the talk was on "how to manage your manager". Different managers have different personality styles, and John has had them all over the years. Each has their strengths and weaknesses, and need to be handled a different way. The personality types were classified by Meyers-Briggs Type indicators. For example, the "Ferris Bueller" is a ESFP, an entertainer, who sees things differently. The best way to handle him is to avoid conflict.

Marie Write of ADM/Wild was the last speaker of Monday. She discussed rebooting creativity for flavor development. She feels that children are born creative, but life experiences tend to drive that creativity out. An example is a "marshmallow challenge, where a free-standing tower needs to be made with only marshmallows, string, tape, spaghetti, and 18 minutes. The best teams were kindergarten students, while the worst team was one comprising MBAs and executive leadership teams (unless the administrative assistant was included). The presentation wrapped up with a fun competition. Tables with 4 – 8 attendees were given either bourbon, gin, or vodka with various mixers and fruits and told they had 18 minutes to work together to make a mixed drink concept including storyboard.



FlavorCon 2015, cont'd

The second day started with Krishna Ratakonda discussed Computation Creativity: The science of Chef Watson. IBM developed an interactive computer program loaded with food ingredients, flavor descriptions, and recipes from various sources. The program is designed to find relationships in large quantities of unstructured data. It has a pleasantness regression and a novelty or “surprise” algorithm, and designed to use natural language. A demonstration showed how given a few parameters (like Italian with roast chicken) along with restrictions (non-GMO, Kosher, no soy), various recipe ideas were generated. Working with the program, menus were refined. The idea behind the program was not to eliminate the need for chefs or flavorists, but to offer a starting point from the vantage of possessing large amounts of data.



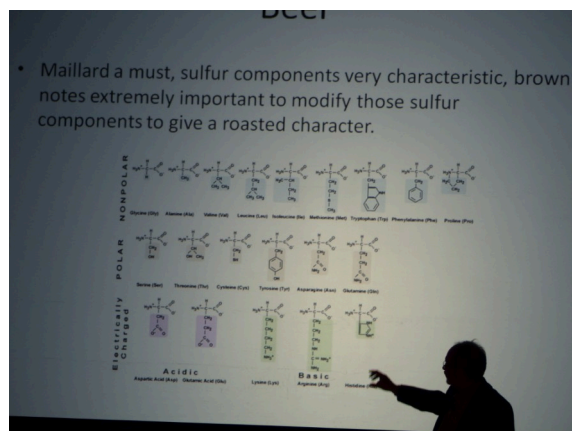
A second taste panel moderated by Judith Michalski followed. These products were artificial. They included: 3-(methylthio) decanal (FEMA#4734, fatty, meaty, vegetable), 2-pentylthiophene (FEMA#4676, coffee, roast meat), 1-(2-furfurylthio) propanone (FEMA#4676, coffee, roast meat, brown), and ethyl cis-4,7-octadienoate (pear, sweet, melon).



Joanna Clifton of Innova Market Insights spoke on clean label and impact on flavors. Consumers are not only expecting clean label (no MSG, GMOs, artificial chemicals and flavors, etc.), but also clear label (all ingredients disclosed, including incidental additives and processing aides, limited number of ingredients). Many consumers still find packaging labels confusing. The media (Dr. Oz, Food Babe) and social media (e.g. Facebook) have empowered consumers to know more about their foods and what goes into them. Also, organic foods, natural ingredients, recognizable food ingredients, and locally source foods are growing. Trust of “big food” is dropping. The presenter was unable to answer if consumers are questioning what was in “natural flavors” and if there was any pushback on their inclusion in foods.



Dolf DeRovira of Flavor Dynamics presented on meat and savory flavoring systems. He described the difference between sweet and savory flavors (sugar enhances sweet flavors, salt enhances savory flavors). He briefly described the Maillard reaction. This was followed by descriptions of important contributors of meat, vegetable, seafood and dairy flavors. He concluded with a discussion on flavor labelling.



Chemical Sources Association History

The Chemical Sources Association (“CSA” or “Chem Sources”) is a trade organization that was created in the 1973 to “locate and encourage the development and supply of flavoring aromatics, and related new materials for use in food and other products.”*

Its members are companies in the Flavor/Fragrance, and Food and Beverage Industries.

In a time before computer technology, CSA also served as a repository for related patent and kosher information for its members who had no other access to such documents.

The organization has since evolved with the advent of technology, and continues to provide its members with a forum to exchange knowledge about flavor raw materials and their suppliers. CSA also periodically works with small-scale manufacturers to bring a small quantity of new ingredients to its members for evaluation and potential commercialization.

CSA regularly holds meetings in conjunction with the Society of Flavor Chemists throughout the U.S.A. from September to May each year.

Their objective at each meeting is to host one or two raw material suppliers

and/or manufacturers who then guide attendees through sales presentations and interactive demonstrations of their materials and technology.

The meeting season culminates in May with their popular **CSA Roundtable** event, which gives 25 to 30 vendors the opportunity to showcase their products to ten focused groups of table visitors throughout the day.

CSA currently has a membership of 88 companies, and the board of volunteer directors meets regularly, actively seeking new ways to provide benefits to its members. The latest initiative for 2016 is a Scholarship Award for Food Science students at a local university.

**Certificate of Incorporation-10/15/99*

~Christine Daley 12/29/15

www.chemicalsources.org



Chemical Sources Association

Your source for unique ingredients that inspire.



GRAS use of Flavor Substances: Risk Management

By Susie Bautista, flavorscientist.com

In Spring 2015, thirty-one certified flavor chemists responded to a survey on GRAS use of flavor substances. This survey was part of a graduate project exploring the difficulty in assessing and interpreting the permissible use of GRAS flavor substances in food and recommended that guidance and training material is readily available.

Questions on this survey included years of experience, size of employer, food category that they service, educational background and if formal training on the safe use of GRAS flavor substances was received. The majority of respondents (80%) report having eleven or more years experience in flavor development work. Of those respondents, the majority had a Bachelor of Science degree and studied either Chemistry or Food Science (70%).

Seventy-seven percent of respondents indicate they received training in using flavor substances safely in formulations and described the sort of training they received. The majority responded that were trained to check GRAS status. Two respondents were active in the FEMA GRAS™ program with one of these respondents having responsibility to write GRAS applications on new flavor compounds and understood the GRAS process from the decision tree analysis for identifying potential risk of a new compound to the toxicology studies (including dose) that would be required to obtain approval by the expert panel. Another respondent had served on the FEMA science committee and Food Chemical Codex (FCC) panel and stated that analysis work to verify flavoring item conformed to FEMA-GRAS™ and FCC specifications was part of their training program on the safe use of GRAS substances.

Approximately 30% of respondents indicated that they review use information or original GRAS publication on flavor substance use. Thirty-three percent of respondents indicate they work with vendors and review their paperwork in order to assure the safe use of flavor substances. However, it is not always possible to find acceptable use level of flavor substances on vendor paper work. For example, FEMA GRAS™ 3455, Ethyl-2- isopropyl-5-methyl cyclohexane carboxamide is not self limiting and does not become unpalatable a high levels. GRAS status limits its maximum use level of 0.6% in chewing gum. There is no mention of maximum use limitation of this flavor substance on the vendor website or paperwork, but the MSDS recommends use is “according to legal FEMA GRAS/FDA guidelines.”

Surveyed flavor chemists indicated that they often check several lists before making a complete assessment of a flavor substance. The multitude of lists and documents that a flavor chemist must check and verify indicate it is not an easy task for flavor chemists to assess the specification and permissible use of GRAS use of flavor substances. A central list with all applicable safety information would aid a flavor chemist in determining the permissible use of a FEMA GRAS™ flavor substance quickly and efficiently. The complete research paper, including survey results, was provided to FEMA in July 2015 and in September 2015, FEMA announced a new resource, the

Is Bitter is the new Black?

Shane T McDonald, PhD

The food and flavor industries have expended a lot of resources to stamp out bitterness. We have bred it out of plants, taken bitterness out by processing, added sugar and salt to overcome it, and developed bitter blockers and masking compounds. This is quite understandable. Among the five basic tastes (Monell is adding more all the time), sweet salty, and umami are considered positive, while sour and bitter are deemed aversive. Sweet indicates sugar and good to eat fruit with a lot of energy. Salt is a vital nutrient. Umami is an indicator of protein. In contrast, sour is fermented food that may be spoiled. Bitter is an indicator of potential toxins. So important was being able to detect the toxins to our ancestors' survival, we now have an estimated twenty-five different types of bitterness receptors, compared to just one type for sweetness. To miss a toxin could be fatal. Our ancestors were especially concerned about keeping potentially toxic foods away from vulnerable children.

Nowadays, being poisoned by our food is realistically not a big concern. However, only a handful of foods possess bitterness as a positive attribute. Examples include beer, coffee, tea, dark chocolate, grapefruit juice, many greens, and aged cheese. Note that all of these would be considered "adult foods". Even for these foods, there have been variations to reduce the bitterness. Think of milk chocolate, process cheese, iceberg lettuce, and light beer.

In an attempt to increase the acceptability of products, the food industry has shifted processed foods away from bitter and sour to sweet, salty, and umami. They are often high fat as well (I am expecting Monell to discover a fat taste soon). As a result, many processed foods are sweet, salty and bland. No negative flavors and tastes, so it's got to be good, right? As Steve Witherly said at the 2014 SFC Symposium, humans are genetically inclined towards junk food.

Unfortunately for the industry, this has created new problems. High sugar and fat are contributing to obesity and a host of related health issues. Salt is suspect of hypertension. Customers are leery of MSG and foods designed to impart umami, such as hydrolyzed vegetable protein and autolyzed yeasts. And, many consumers are bored with standard fare and are looking for new experiences and authenticity. Look at the interest in hot, pungent foods. The heat from chili peppers is technically a pain phenomenon, but spicy foods are now very popular. Could American consumers be ready for bitterness?

The average American mass-produced beer has very low bitterness, from two to twelve Bitterness Units (BU). But, the craft beer revolution has greatly increased the bitterness in their products. Many proudly list the BUs on their offerings. It is not uncommon to see beer with over 50 BU.

Ice berg lettuce is being replaced by bitter greens such as chard, radicchio, and kale. Fruits such as bitter melon have also become trendy. Bitter dark chocolate consumption is increasing due to perceived health benefits, but it also has a favorable taste. Mixologists are making exciting new cocktails with bitters such as Angostura™.

Many processed foods and snacks have gotten a bit bland by removing sourness and bitterness. Can we put the authenticity and excitement back by judiciously using bitterness? Replace the blandness of process cheese with brewer's yeasts or extracts for an authentic and fuller flavor. There is also interest in using bitterness to increase the flavor impact and allow salt to be reduced in snacks. Bitterness may complement sweetness, such as a burnt bitter note from toasted bread with a sweet strawberry jam.

Many bittering extracts and compounds are available, such as quinine (FEMA#2976), caffeine (FEMA 2284) and extracts such as s chicon (FEMA#2281 and others), quassia (FEMA#2971), gentian (FEMA#2506), wormwood (FEMA#3114 and others), angelica seed (FEMA #2089), celery, turmeric, hops, and caffeine source such as coffee, gurana, yerba mate, cola, and cocoa.

So, it may be good time for chefs and culinogists to work with flavor chemist to explore the judicious use of bitterness in flavors and processed foods to balance sweetness, allow for reduced salt, and add more complexity and authenticity to foods and flavors.